

The New Challenging Role of Teachers in Information Age: How to Improve Teachers' Professional Development with the Use of Technology

–A Case Study of a Middle School in Shanghai

Jie Sun



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Faculty of Education

UNIVERSITETET I OSLO

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子曰: 学而不厌, 诲人不倦
——孔子 《论语·述而》

The nature of being a teacher

*The master said: "Learning without satiety, and
instructing others without being wearied."*

Confucian Analects Book VII: Shu R Chapter 2



Abstract

Education is both important and complicated. It is important because it can improve the development of a nation and quality of people. It is complicated because it can be influenced by many factors and it will change very fast with the development of society. Countries from all over the world attached more attention to improve the quality of education, and China is no exception in it. The Chinese Central government announced “... *give priority to education and turn China into a country rich in human resources*” in 2007 and later Chinese Ministry of Education promulgated “*Outline of Chinese National Plan for Medium and Long-term Education Reform and Development, (2010-2020)*” which launched new strategies and the new direction to Chinese education reform, and in particular, stressed to put educational informationization in the first place of education development.

The present study aims to investigate one aspect of educational informationization- information technology in teachers’ professional development, so the following questions were addressed: what aspects of professionalism does the current TPD include; to what extent can the employed models give the help to teachers’ profession development in practice; how can TPD be improved with the use of technology; what should teachers do for efficient and effective TPD in China. Teachers are not only as the roles of teaching but also as researchers and lifelong learners. Teachers’ professional development should always keep a sustainable way.

The present study is a case study which employs the qualitative research strategy, and a semi-structured interview was conducted among 12 teachers one by one in Shanghai Jiuting Middle School. Data collection based on the answers of the

individual interview, and then collected data was analyzed in accordance with the related research questions.

The present study found out: 1. Teachers' social status and their qualification are two main aspects of professionalism in TPD. 2. Standardized TPD, Site-based TPD and Self-directed TPD all can give the support to teachers' professional development but the site-based TPD is the most popular and useful approach to teachers. 3. Technology can make contribution to teachers' teaching and their development, but there are still lots of problems when ICT is applied to TPD. 4. A successful teacher's professional development should be dominated by external and internal factors which include national education policy, school administration, and investment of education, technology support and teachers' own motivations.

Key terms: TPD; Models of TPD; Educational Informationization; ICT integration;

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Abbreviations

BBS	Bulletin Board System
BLOG	Web Blog
CPC	Communist Party of China
CST	Competency Standards for Teachers
FTP	File Transportation Protocol
GDP	Gross Domestic Product
ICT	Information and Communication Technology
ILO	International Labor of Organization
MOE	Ministry of Education of China
MSN	Microsoft Service Network
PPT	PowerPoint
PRC	the People's Republic of China
RMB	Ren Min Bi (Chinese currency)
TPD	Teachers' Professional Development

Chapter 1 Introduction

子曰：“默而识之，学而不厌，诲人不倦，何有于我哉？”¹

-- 孔子《论语·述而》

The Master said, "The silent treasuring up of knowledge; learning without satiety; and instructing others without being wearied: -- which one of these things belongs to me?"

Confucian Analects Book VII: Shu R Chapter 2

1.1 Introduction

Confucius was a great philosopher and educator in China two thousand years ago. His thoughts especially in education dominated the education system many years in China. His book “Confucian Analects” has many ideas on teaching and learning, and in the above sentence, he pointed to the nature of being a teacher.

In this chapter, the main purpose is to give the brief introduction and the structure of the whole thesis, which includes the background to the study especially for the selected research site. And then it follows the aims of the study and introduces the research problems. Last but not least, some possible limitations will be discussed as well.

1.2 Background to the study

The arrival of the Information Age has changed the framework of society a lot, and the hot issue of the 21st century is concerning about information technology. Information technology also provides an access to the dissemination, development and utilization of information. Castells(1997) also declares that it is the time of information age, and the technological revolution, centered on information technologies, is reshaping the material basis of society with the accelerated pace. “*Our societies are increasingly structured around a bipolar*

¹ http://www.cnculture.net/ebook/jing/sishu/lunyu_en/index.html

opposition between the Net and the Self.” (Castells, 1997) And at the same time in the educational area, the emergence of Information Age presents many unprecedented challenges, opportunities as well as problems to educators and learners, and as a core in teaching process, teachers’ professional development is also influenced by the trend. Information technology can be a method and a tool to integrate and assist the teachers’ teaching and the students’ learning (Pelgrum & Law, UNESCO, 2003). The development of information technology leads to profound challenges and changes for teacher professional development.

The following is brief history about teachers’ professional status: firstly, in 1966, together UNESCO and ILO (International Labor Organization) think that teacher should be regarded as a professional occupation. Secondly, on 1st January 1994, the Chinese Government promulgated “*Chinese Education Law*” which stipulated that teachers are the professionals who perform teaching duties, and it is the first time to recognize the teachers’ professional status legally in China. Thirdly, in 1996, UNESCO hosted the 45th International Conference on Education in Geneva, and nine recommendations was adopted in the conference, in one of which is the proposal about “teachers’ professional development” as the strategy to improve teachers’ working conditions and social status; teachers’ teaching and research ability. Fourthly, in 1998 the International Conference on “*Teachers’ Education in 21st Century*” was held at Beijing Normal University which defined that the core of the current education reform is about professionalization of teachers. More attention is given on the teachers’ professional development and status both from the perspectives of the world and the Chinese government. But due to the impact of information technology applying to education, teachers’ professional developments face more challenges and have the new direction. (Wang & Gao, 2007)

Teachers are also a key element in the adoption and integration of ICT in education because teachers play a crucial role which is the key to make students’ learning happen. Babbage (2007) gave the definition for teachers: “*Teachers cause learning*” A teacher is someone who can play the important role and create, design, and/ or find instructional activities and experiences that cause student to learn. (Babbage, 2007) In the range of subjects’ area, teachers have already learned knowledge systematically what the students expect to learn when they were in the university or college before they became teachers. The following task for them is how to transfer the knowledge to the students effectively, so Babbage (2007) thought if someone works in a classroom at a school and has the title of teacher, he is supposed to do what it takes legally, professionally, and ethically to make sure that all

students learn. In order to make more achievements in teaching, the activities for teachers' professional development cannot be ignored, no matter that it is in the teacher education (pre-service), continuing education or in-service training. Under the situation of globalization and information age, it requires teachers to acquire new skills and competency that is associated with their changing roles and practices in the teaching process. Teachers' professional development also has the new directions and goals with the innovation on how to use information technologies to integrate education development effectively and efficiently.

1.3 Background to the selected research site

China is a country with five thousand years' brilliant cultures. Confucian educational thought and its exam-oriented learning has a dominant position in the education system of China. Examination is the only indicator to measure personal qualities and select the talent, and the scores or grades of students are also the only measurement to the achievement of learning and teaching. All of the school activities link to how to improve the students' scores. Because the high competition becomes stronger and stronger in the Chinese society, the entrance examination to the university became one of important exams to determine the fate of one student's whole life. In China, the entrance examination to the university was described vividly as "the hordes of troops and horses pass through the only wooden bridge."² A series of problems were triggered by this phenomenon, for example, the heavy pressure of students and teachers, the students' weariness of study and the so-called a "talent" with high scores but with incompetence skills and so on. Under this education system's teaching and learning, students are only copy machines. Good students are only those who have good memories, but they are lack of creativity and the skills for problem-based learning and solving the practical problems. Will the so-called good students be "useful" persons in the future and to what extent can they contribute to our society? All these problems make the Chinese education into lost and these problems are also one of the obstacles to the motivation of students' active learning. And these situations lead to the result that learning knowledge in school and practical demands for future professional career are disjointed, which happens in the whole educational system in China not only in the basic education but also in the higher education.

The Chinese government always pays more attention to the education, and a series of educational reforms were carried out since the mid-1980s. Generally speaking, Chinese

² <http://www.hnenw.cn/gaokao/ShowInfo.asp?ID=107230&ArticlePage=1> (In Chinese)

educational reform has three stages. First, from 1985 to the early 1990s, national education reform in China was focus on the reform of educational structure, which gives more autonomy in educational decision-making from the central government to the local government and schools. Second, in 1993, the educational reform points out that the development of basic education should not only emphasize quantity, but also quality and efficiency. Third, in early 1999, the national curriculum reform and teacher in-service training were put forward. At the same year, the Chinese government promulgated the *Decision on the Deepening of Educational Reform and the Full Promotion of Quality Education*, mandating change of educational structure, system, aims, curriculum, and methods to suit the needs of social development in the twenty-first century. (Landowe ed., 2008, P.16) Since then it is the important milestone that the efforts of national educational reform in China have begun to focus on school level change, the concern with the questions of how to promote school comprehensive improvement, how to change the exam-oriented education to quality-oriented education, and how to change the role of teacher-centered to student-centered. (Landowe ed., 2008, P.16) President Hu Jintao of P.R.C said: “the development of educational informationization is an important indication of a country’s educational modernization.” (www.moe.gov.cn) Social development in China requires the continuous advancement of ICT application in its education system. According to *the Eleventh Education Development Five-Year-Plan Outline*, all elementary and secondary schools have had the access to the Internet by 2010 and the outline hopes that the enhanced ICT application will assist the modernization of the Chinese basic education system. (www.apcoworldwide.com/.../chinas_11th_five-year_plan)

Under the guidance of this policy, the Chinese government has done a lot of investment on education infrastructure including improving campus construction; introducing ICT into the campus; buying the related facilities such as hardware, software and completing the network connectivity in schools. So according to the series of reforms, the teachers have to face the new trend and have their own developments.

The selected research site, Shanghai Jiuting Middle School is a public junior middle school. In July 2005 due to adjust the layout of Jiuting district, the school moved to a new location. The total area of the school is 20,000 square meters. Campus construction using garden-style has reached an advanced standard of campus construction in Shanghai. At present there are a total of 25 school classes and more than 960 students, scheduling nearly 107 teachers and

staffs. Each classroom has been equipped with the multi- media instrument, and the whole campus has completed the network connectivity. The school has its own webpage as well. There are two computer rooms with 200 “Lenovo” advanced computers. Each teacher has his own computer in his teacher’s office. Two specialized teachers graduated from the universities who can provide the technology support, maintain and administrate the campus network and train the computer skills for teachers and students.

Due to the input of these infrastructures of information technology into the campus, the school had some internal adjustments and teaching reforms with the guidance of ‘student-centered’, and the school also provided some relevant training for the teachers and made some achievement recently.³

1.4 The aim of study

The reason for choosing this research site: I worked as a teacher in Shanghai Jiuting middle school for five years. When I started to work there, the school did not adopt the method of multimedia in teaching and the network of the campus did not connect. Traditional teaching methods and teaching tools (textbooks and blackboard) were in dominant place in the daily teaching activity. But from the second half of 2005, each classroom was equipped with a multimedia device, and each classroom and teachers’ offices were connected to the network cable. So it means the whole school had the access to internet network. And at the same time, the school adopted the teaching reform, and asked all teachers to make the PowerPoint presentation slides for teaching and write the electronic lesson plans to prepare the course. During that time, the school provided some training course for teachers within the school, such as editing the documents with Microsoft Word and how to make the PowerPoint courseware. But unfortunately, I left the school in early 2006, so I cannot compare the long-termed outcomes of using information technology in the classroom by myself. But I have always been concerning about the development of the school where I worked before and I got to know some news about the achievements what the school recently made from my former colleagues and the website of the school. After a few years’ efforts, Shanghai Jiuting middle school recently got several prizes, such as “Shanghai Model Unit” “a safe and civilized campus in Shanghai” “Experimental school of quality education” “Experimental school of modern educational technology”. All these titles show the impressive brilliance of school

³ <http://www.jtzx.sjedu.cn/xxxgk/xxgk/xxgl/xxjj/index.shtml> (In Chinese)

teaching quality and scientific research, which also aroused my strongest interest and curiosity to find out some reasons or facts for the achievements whether it is concerning with the following: integrating ICT into schools has great and positive effects; and information technology will have great help to the development of the school and teachers involved. Based on that, I decided to carry out my research and choose Shanghai Jiuting middle school as my research site. Because I worked there before, I can easily get the permit and support from the school and the staffs to carry on my research.

There is no doubt that teachers are the core part of the whole teaching. Teachers are also the direct factor that can impact the result of teaching and achievement of students, so teachers play very important role as we all know. Teachers implement the whole process of teaching such as teaching plan, teaching aim, teaching result and feedback. The main task of teacher is to transfer the specific knowledge to the student and make the student learn better. With the development and deepening of education reform, the quality of teachers is paid more attention and teachers' professional development is also on the agenda. (Keen Babbage, 2007)

Teachers also play a crucial role in the adoption and integration of technology in education. If teachers succeed in utilizing technology in the process of their work, they not only contribute to improve learning outcomes in their students, but also get benefit personally from that. So the study will focus on the advantage and barriers when teachers use the technology to integrate their teaching and personal development, and then to find out what are the possible reasons. Finally to make teachers realizes how to achieve the goals for their teaching and personal development with the use of technology, and how to make the change from 'learn to use' to 'use to learn', which all makes teachers professional development move forward along with the continuous and sustainable way. (W. J. Pelgrum & N. Law, UNESCO, 2003)

A lot of study about teachers' professional development was conducted before, but recently teachers' professional development with technology became the hot issues to discuss. China is a developing country, so she needs to develop with lots of reforms not only economy but also culture and society. These reforms and developments based on the low level and began with the low starting point, so the changes will be easily seen and the progress will be significant.

The study was conducted by the qualitative research methodology and interviewed 12 participants who have different background such as age, gender, different subjects, years of teaching and the attitudes of using technology, and difficulties what they faced and achievement what they made on using technology in their teaching, and they also hold different opinions to look at how much effect is made on their personal development.

The aim of study is mainly to give the outline about their professional status and how three employed models of TPD worked with the use information technology integrating into teaching and teachers' professional development and also make us clearly know that information technology is not only a subject but also a method and a tool. On the one hand, we get to know and understand how information technology works on the changing role of teachers, and on the other hand, we should learn more how to make the teacher professional development programs more effectively and efficiently. With using information technology, teachers' professional developments not only deal with the developments of isolated individuals, but also pay more attention to collaborate with each other within the online learning communities.

1.5 Research Problems

McMillan (1997) said that the most difficult and important part of research is to formulate a clear, concise, and manageable research problem. *A research problem implies the possibility of empirical investigation- that is, of data collection and analysis.* (McMillan, 1997, P.80)

The study is conducted by the approach of qualitative research method, and the study attempts to examine the changing roles of teachers with ICT integration and what is efficient and effective teachers' professional development. The study is a case study of middle school in Shanghai of China, so it will more focus on the current situation of Chinese teachers' profession development in the nine-year compulsory education stage. The following research questions are guided and formulated on the above ground.

1.) What aspects of professionalism does the current TPD include?

With the development of Chinese educational reform, teachers' developments were directed to the professionalism. What should professionalism include? The present study will

investigate the current situation of teachers about their social status, responsibility and obligation, salaries, and benefits etc. in depth.

2.) To what extent can the employed models give the help to teachers' professional developments in practices?

According to Gaible and Burns (2005), TPD can be divided into three categories: Standardized TPD; Site-based TPD; and Self-directed TPD. Which model is widely used for TPD and can make great contribution to successful TPD practices?

3. How can TPD be improved with the use of technology?

The question indicates what the new competences required for integrating information technology into the learning and teaching process. Although from the perspectives of all over the world and China they have different standards, we still need to know what kind of competences of teachers have already had and what they are lack of from the selected research site. Are there some difficulties when ICT was introduced into TPD? What are they? And what are possible reasons for these difficulties? A study will be carried out and get the findings through the interviews. The major difficulties and obstacles of teachers are examined when they use information technology into their teaching.

4. What should teachers do for efficient and effective TPD?

The main direction of the present study is to make teachers' professional development go along with the process of sustainable lifelong learning. Teachers not only play the role of teaching, but also as researchers and lifelong learner.

1.6 Limitations of Study

The current study has several major limitations. Firstly, interviews are only conducted with a small number of individuals in a middle school in Shanghai. The findings were only shown on behalf of selected site. Chinese territory is huge, so different districts may have different situation. The generated findings may be not applicable to other places of China. Secondly, the selected research site is the place that the author worked before and interviewees are the

persons who the authors are familiar with, so some subjective factors may influence the current study. Thirdly, interviews in the current study were managed by using a convenience sample. The author sent the cover letter and interview guide to headmaster of Shanghai Jiuting middle school and he helped me hand out all the materials. Although all the interviewees accepted the interview voluntarily, the convenience sample based on the availability of participants may not be truly representative. Fourthly, the current study referred to the technology which focused the usage of ICT, and the other technology appliances such as radio, TV, video recorder were not accounted into the range of investigation. Fifth, TPD in the current study focus on in-service TPD, so teachers' education in pre-service context didn't give too much attention.

1.7 Structure of the thesis

There are seven chapters in all in the thesis. It is organized by the procedure of the current study. Chapter one is an introductory which consists of brief background of the current study, the main purposes, the research questions and some limitations. Chapter two provided the theoretical framework for the study: the three models of TPD and interaction paradigm. Chapter three moved forward a single step to find some related literature reviews in order to have some documents support for the current study. Chapter four illustrated some characteristics of the research strategy, research design, research methods, and methods of data analysis and some information about participants. The fifth and sixth chapter generalized some results and finding to research questions, and have some discussion based on the finding. The last chapter presented some implications from the theoretical and practical points of views respectively, and conclusion and comments will be described at last.

Chapter 2 Theoretical Framework

子曰：“温故而知新，可以为师矣。”
—— 孔子《论语·为政》

The Master said, "If a man keeps cherishing his old knowledge, so as continually to be acquiring new, he may be a teacher of others."

*Confucian Analects Book II: Wei Chang Chapter 11*⁴

2.1 Introduction

The explanation of the above sentence can be expounded further like this: if one can have new inspiration by reviewing what he learned before, he is qualified to be a teacher. The Confucian's view on learning and teaching partly illustrated the character of teachers' professional development, which should be a continuous learning and self-development process with some identified goal. In this chapter, TPD will be discussed from theoretical point of view. According to Gaible and Burns (2005), TPD model can be placed in three broad categories: Standardized TPD, Site-Based TPD and Self-Directed TPD. They all have their own strengths and weakness, which will be explained in detail in this chapter. Hopefully in the effort, a theoretical framework can be established and give the theory support for the present study. Interaction paradigm illustrates the development always involved internal and external factors.

2.2 Models for Teachers' Professional Development

2.2.1 Understanding teachers' professional development

Hooker (2008) points to that TPD is known as an “in-service” or “teacher education” program which is provided to teachers as the instruction to promote their development in a certain area. TPD is used as a tool, and the policymakers' vision for changes can be disseminated and

⁴ http://www.cnculture.net/ebook/jing/sishu/lunyu_en/02.html

conveyed to teacher with it. *“Though the recipient of TPD is the teacher, the ultimate beneficiary is the student.”*(Hooker, 2008 GeSCI)

From Villegas-Reimers's (2003) thoughts, she summarizes seven characteristics of TPD:

1. TPD is based on constructivism rather on a transmission-model.
2. TPD is conceived of as a long-term process.
3. TPD is conceived of as a process that takes place in a particular context.
4. TPD is intimately linked to school reform.
5. A teacher is conceived of as a reflective practitioner.
6. TPD is seen as a collaborative process.
7. TPD may look and be very different in diverse settings.

In order to have an effective and successful teacher professional development, the two key points should be mentioned: find out what teachers need and be familiar with their work environments including schools and classrooms. TPD engages teachers as learners and some essential techniques such as, mentoring, teamwork, observation, reflection and assessment can be used to carry out the whole teachers' professional development. (Gaible & Bruns,2005)

2.2.2 Three models of TPD

Gaible and Burns (2005) conceptualized three models of TPD and pointed to the strengths, limitations and cost consideration of each model when implementing them. The three models have interrelation which will complement and support one another. The three models provide the help as much as they can in order to satisfy with the need of teachers, which will improve TPD in sufficient and effective way.

1.) Standardized TPD

Standardized TPD is the most centralized approach which is best used to disseminate information and skills rapidly among large teacher populations, in which workshop and training sessions are involved. Standardized models introduce training-based approach, cascade approach or train-the- trainer approach. (Gaible and Burns, 2005)

In the training-based approach, presenters share skills and knowledge with large groups of educators through the ways of face-to-face, broadcast, and online. Training-based approaches focus on the exploration of an idea and the demonstration and modeling of skills. (ibid)

In the Cascade model, one or two teachers from a school receive standardized TPD training and return to their school to replicate the training that they have received. They serve as “champion teachers” or “vanguard team”. (ibid)

Standardized models can be effectively used when they employed in accordance with best practices:

- *Expose teachers to new ideas, new ways of doing things and new colleagues*
- *Disseminate knowledge and instructional methods to teachers throughout a country or region*
- *Visibly demonstrate the commitment of a nation or vendor or project to a particular course of action*

Consider Using Standardized TPD When...

The goal is to:

- *Disseminate information to the largest number of teachers possible*
- *Introduce teachers to computers, the Internet, and strategies for using these tools*
- *Build awareness of best practices*
- *Expose teachers to new knowledge, skills, strategies and individuals*

And when conditions are such that:

- *Expert knowledge is scarce or concentrated in urban areas*
- *Additional follow-up can be provided on-site in schools*

(Gaible and Burns, 2005)

STANDARDIZED TPD AT A GLANCE

Strengths	Limitations	Cost considerations
<ul style="list-style-type: none"> • One-to-many format facilitates large-scale project • Introduces a common knowledge base and skills to many participants • Broadens teachers' knowledge by providing access to new ideas and strategies • "Pyramid" training structure facilitates large-scale projects and rapid diffusion across systems • Can engender new alliances and relationships among participating teachers • Cost-effective means of distributing discrete sets of knowledge and skills intended to be implemented by all teachers—HIV/AIDS awareness in schools, gender-equity initiatives in classrooms 	<ul style="list-style-type: none"> • Excludes site-based issues • "One size fits all" approach excludes contextual issues that may pose barriers to implementation in schools • Unless it is a series of workshops over a long period of time, the one-shot approach of workshops does not address the long-term, developmental nature of learning • Significant diminishment of skills and knowledge in the transfer from champion teacher to colleagues • Format doesn't provide follow up or support—essential components for success that require additional cost and capacity • Evaluation and accountability are difficult—classroom-based results only emerge over time, and are outside the workshop structure • Training facilities may not match school conditions—champion teachers and teachers may not be able to apply TPD 	<ul style="list-style-type: none"> • Lower unit costs: cost per teacher trained, and cost per hour of training • Costs include travel-related expenses for trainer and participants • Cost-effectiveness should be measured in relation to outcomes • Budgeting should address follow up and support • Electronic follow up (via the Internet) cannot work unless all areas of infrastructure are sound • Allocations must include teacher incentives—especially when champion teachers benefit financially from additional income or per diem reimbursements

Figure1: Standardized TPD Model

Source: Gaible and Burns, 2005

2.) Site-based TPD

Site-based TPD often happens in schools, resource centers or teacher training colleges. Teachers work with local ("in house") facilitators or master teachers to engage in more gradual process of learning, and building mastery of pedagogy, content and technology skills. Site-based TPD usually pays more attention to the specific, situational problems that individual teachers meet in their teaching when they tend to use new techniques. (Gaible and Burns, 2005)

Site-based TPD model consists of a variety of approaches: observation/ assessment; open lessons; lesson study; study group; inquiry/action research; case studies; mentoring etc. Due to the aims and real situation of the study, the above approaches in site-based TPD model are adopted mostly and widely in the selected school, so the following chapter will continue to discuss these approaches in details, especially from the ICT integration aspect. Site-based TPD model can support and provide follow-up for standardized model. (ibid)

Site-based TPD model tends to

- *Bring people together to address local issues and needs over a period of time*

- *Encourage individual initiative and collaborative approaches to problems*
- *Allow more flexible, sustained and intensive TPD*
- *Provide ongoing opportunities for professional learning among a single set of teachers*

(Gaible and Burns, 2005)

Consider using site-based TPD when...

- *Changing instructional practices is critical*
- *Plans call for a significant enhancement of teachers' subject knowledge or of classroom teaching and learning*
- *Objectives include ongoing growth toward overall excellence in teaching and learning*
- *There is a core group of teachers from each school able to participate in professional development*
- *technology- television, radio, the Internet - can be used to supplement professional development*
- *Facilitators or master teachers can be developed regionally at teacher training colleges or at schools*

SITE-BASED TPD AT A GLANCE		
Strengths	Limitations	Cost considerations
<ul style="list-style-type: none"> • More conducive to building a community of practice • Locally based, focused on local needs and builds and cultivates local expertise • Supports sustained TPD efforts that cultivate expertise in schools 	<ul style="list-style-type: none"> • Time intensive • Difficult to provide expertise to low-resource areas, especially those impacted by conflict or that are geographically remote 	<ul style="list-style-type: none"> • On-going training involves recurrent expenditure • Costs include creating training materials, and purchasing audio-tapes, cassette players, batteries • Must budget for transportation so facilitators can reach schools

Figure2: Site-based TPD Model

Source: Gaible and Burns, 2005

3.) Self-directed TPD

Self-directed TPD model needs teachers themselves to determine their own professional development goals and select the relevant activities to achieve their goals. Normally teachers can choose to watch video examples of classrooms, read books on education or carry out a field of research study, write reflection journals of their teaching, perform case studies, take online courses, search for lesson plans or some resources on the internet or observe classes taught by colleagues. Teachers take all responsibilities of their own and require little of the school, so it looks as an informal approach of TPD. Because this approach is based on individual activities mostly, teachers may be challenged to make use of the resources that they find on their own. Gaible and Burns (2005) points to that the self-directed activities should not be used as the primary means of providing TPD. Instead, they should be used to complement and extend standardized and/ or site-based TPD. (Gaible and Burns, 2005)

Consider using self-directed TPD when...

- *There are no other organized professional development options*
- *Self-motivated and innovative individual teachers need opportunities for learning that are not otherwise available*
- *Self-directed activities are part of an overall professional development program that includes standardized or site-based TPD*
- *Supports, incentives and structures are in place to ensure that self-directed TPD is the most effective way to meet teacher needs*

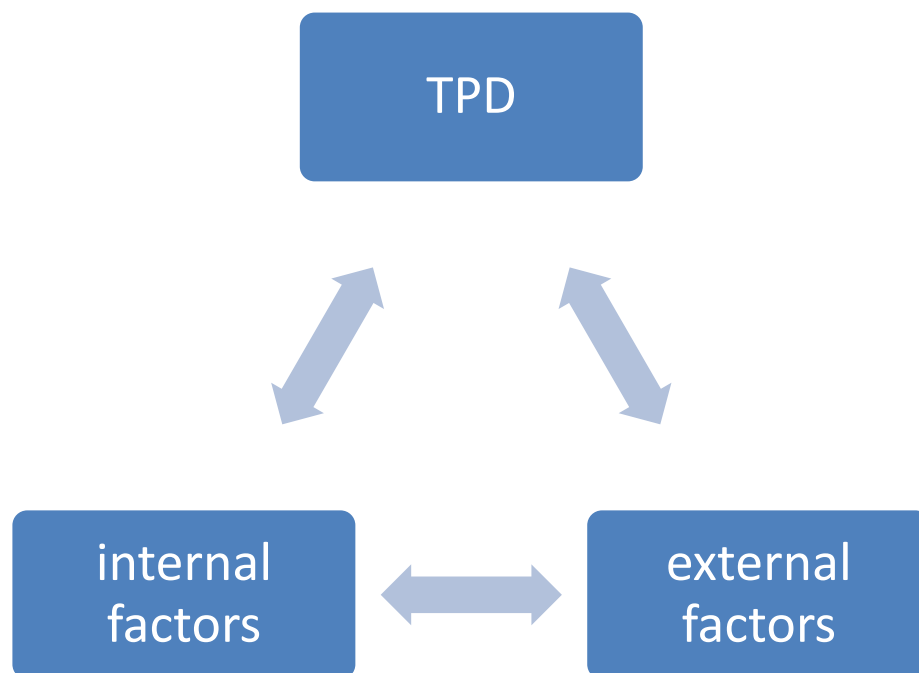
SELF-DIRECTED TPD AT A GLANCE		
Strengths	Limitations	Cost considerations
<ul style="list-style-type: none"> • Flexibility • Opportunities for choice and individualization • Teacher can participate in online communities and access resources that would be otherwise unavailable. 	<ul style="list-style-type: none"> • Teachers must have access to technology or to other resources • Assumes that the teacher has already developed a high level of expertise • Only works with teachers who are highly motivated and autonomous • Since the teacher works alone, the attrition rate may be higher • When technology is not working, the learning opportunity is lost 	<ul style="list-style-type: none"> • None to little (to school or government). Individual assumes the cost of his/her own professional formation • If teachers access the Internet at school, learning may involve dial-up costs and printing • If teachers use telecenters or Internet cafes, access costs may pose a barrier

Figure3: Self-directed TPD Model

Source: Gaible and Burns, 2005

2.3 Interactions Paradigm

The changes and development cannot be separated from the internal and external factors. In fact, the development is the result of the interaction of two factors. External factors can provide conditions and support, and internal factors are motivations and the essentials of the development. Both the external factors and internal factors play a role together, which the good development can be promoted. Teachers' professional development also follows this rule. Regardless of the supports are from policy maker, the administrators of the school, the other teacher or some equipments, they only can provide good "environment" for TPD, but the needs and motivations of teachers are the key points on the impulse of efficient and effective TPD. External factors and internal factors can work together to contribute a successful TPD. (Squires and McDougall, 1994)



(How can technology provide support for TPD; what kind of technology needs according to the needs of teachers)

Figure4. Interaction of internal factors and external factors for TPD

Chapter 3 Literature Review

子曰：“学而不思则罔，死而不学则殆。”

—— 孔子 《论语·为政》

The Master said, "Learning without thought is labor lost; thought without learning is perilous.

Confucian Analects Book II: Wei Chang Chapter15⁵

3.1 Introduction

Confucian also had some ideas on the reading and thought. He gave us the advice that reading and thought must be combined in learning process, so in this chapter, it will present some literature discussions which still relate to TPD, but in a new paradigm- with ICT integration. The content of this chapter is based on searching, reading and criticizing of existing literatures about TPD with ICT integration, and its purpose is to build a body of accepted knowledge on the study. The study is a case study in China, so the general current issues of TPD in China will also be considered.

3.2 A new paradigm for teachers' professional development

Globalization and knowledge-based economy make most societies experience a tremendous change, and under the influence of the trend, there are some new demands on the learners, which include a sustainable growth and development of learners. Its main objective is to make the learners have lifelong learning abilities, and therefore most education changes and reforms are more and more closely associated with this objective. Information and communication technologies have brought some new possibilities to the education changes. (Pelgrum and Law, 2003) contend that education changes, particularly those changes connected with the

⁵ http://www.cnculture.net/ebook/jing/sishu/lunyu_en/02.html

global information society, which requires staff development activities. The term “staff” includes school principals, teachers, and technical and administrative support personnel who all contribute their effort to the implementation of the intended changes.

It is also necessary to give the additional technical and pedagogical support in order to make these changes be affected in the classroom, so teachers’ professional development has a new paradigm in both pre-service and in-service programs. Information and communication technology related changes in education is a complex and challenging task, so more demands on teachers’ competency or skills will be redefined in the context of ICT integration.

3.2.1 New competency standards of teachers

Gaible and Burns (2005) point to that teacher’s skills as a professional educator are divided into three levels in general: basic, intermediate and advanced.

The basic skills of teachers:

- *Speak, read, write, and teach with fluency in the national language*
- *Perform basic arithmetic*
- *Teach basic language and arithmetic skills using traditional lectures and testing*

The intermediate skills of teachers:

- *Have basic skills*
- *Understand and teach their subject matter at a basic level in the national language*
- *Plan their courses to meet national or local standards*
- *Understand the basics of how children learn*
- *Adopt teaching methods appropriate to their students’ abilities and learning styles*

The advanced skills of teachers:

- *Have intermediate skills*
- *Teach their subject matter with ease and make relevant connections to other subjects and to daily life*

- *Develop course outlines, lectures and instructional materials*
- *Identify resources to update their knowledge of the subjects they teach*
- *Build on students' prior knowledge and experience*
- *Teach students how to analyze and solve problems*
- *Teach their subject using multiple tools and resources*
- *Understand and use a variety of instructional strategies, including traditional lectures, project-based learning, inquiry-based learning, and collaborative activities*
- *Use ongoing assessment to identify and address student weakness*

When the “student teachers” are in the teacher education institutions, they will receive a series of training such as, how to be a teacher with teachers’ moral norm and basic skills, and how to instruct and organize teaching in the classroom from the aspects of pedagogy and methodology. Before the teachers got their qualification to come into the classroom, some specific knowledge and basic skills must be achieved in advance. During the teaching process, the novice teachers may be gradually changed into experienced teachers with some advanced skills, when they continue to learn and gain more competency and skills with practical instruction of teaching in the classroom.

Besides the above skills, due to ICT integration, teachers have to face more challenges: how to manage computers in their classrooms; how to compete with students in accessing the enormous body of information particularly via the internet and how to use the hardware and software to enhance the teaching and learning process. (Hooker, 2008) With the call of these new challenges, the competency and skills of teacher must be updated.

Bhatta(2008) believes that effective teacher preparation in ICT- based education needs sufficient training in three areas:

1. Information technology literacy
2. Student-centric interactive teaching
3. Integration of ICT-based instruction in student-centric interactive teaching

In 2008, UNESCO published “ICT Competency Standards for Teachers”, and the ICT- CST project is to combine a focus on ICT skills development of teachers with new tendency of views in pedagogy, curriculum and school organization. ICT-CST provides guidelines for all teachers who need to be prepared to provide technology-supported learning opportunities for their students. The Standards (UNESCO, 2008) mentioned that new technologies require new teacher roles, new pedagogies, and new approaches to teachers’ professional development in both pre-service and in-service programs. The new important skills for teachers with ICT integration should include:

The ability to use particular software applications to teaching;

The ability to develop innovative ways of using technology to improve and structure the learning environment in non-traditional ways;

The ability to merge new technology with new pedagogy;

The ability to make active classrooms;

The ability to encourage cooperative interaction, collaborative learning and group work;

The ability to have technology literacy, knowledge deepening and knowledge creation (UNESCO reports, 2008)

The ICT-CST project mainly carried out in developing countries, and it shows that teachers who succeed in making use of ICT in their work process do not only contribute to improved learning outcomes in their students, but may also benefit personally from enhanced work productivity, reduced isolation and increased professional satisfaction. (Carlson and Gadio, 2002)

3.2.2. Pros and cons of TPD models with ICT integration

In chapter two, the three models of TPD were discussed, but with the emergent of technology in education, some new changes and content will occur in these models. TPD can be as the provided instruction to teachers to promote their development in a certain area, and furthermore, ICT integration can strengthen the effect of TPD from the previous research. It is also essential that teachers understand that ICT integration in education will only change their role, rather than minimizing or eliminating their role together. No matter what kind of models of TPD will be adopted, the function of ICT integration should be considered. The following

will give the analysis of pros and cons of three models with ICT integration, and hopefully it will give the helpful and effective models for TPD. (Hooker, 2008)

1.) Pros and cons of standardized TPD

Standardized TPD is a centralized model from “top” to “down”, so it will easily transfer the opinions of policy maker about education reforms, and the most advantage of this model with ICT integration is to build awareness about computers, learner-centered instruction and new curricula effectively. Due to the cascade model based on the training of trainer, the selected teacher can also provide ICT support and training for their peers. (Dede, 1999 cited in Butler and Leahy, 2003)

The “one fits for all” principle of the standardized TPD model also has some limitations:

1. Workshop for the selected teacher takes place at one time and in one location without on-going support, so the results in effective changes for teaching and learning can rarely be seen.
2. In this model, teachers are knowledge consumers who have the responsibility to bring what they learned back to their classrooms and put into practice, so they are lack of incentives to participate, collaborate and experiment with new strategies. They are only passive knowledge receivers, and during the process, some complex information may be lost, as well. (ibid)

2.) Pros and cons of site-based TPD

As chapter two mentioned, site-based TPD is verified as the most effective and the most widely used approach of TPD, because many studies have point to the importance of site-based programmes which can be linked to the change and innovation at the classroom and school level. (Anderson, 1996; Somekh and Davis, 1997; Potter and Mellor, 200; cited in Pelgrum and Law, 2003) There are a variety of approaches in site-based TPD, and the lists were given in Chapter two. The following will discuss them one by one in details.

1. Observation/ Assessment

In the observation/ assessment approach, the TPD provider who is probably a master teacher in a school or a specialist working district-wide will observe teachers in their classroom, and then assess their instructional practices, and at last they will provide structured feedback for teachers.

When using observation/ assessment approach, it can improve teachers' instructions skills and assess or guide teacher implementation of computers or a new instructional approach, and ICT can strengthen this approach by recording and displaying observation data using spreadsheets; and videotaping teachers in action in their classroom and guide them in viewing these videos as a kind of self-assessment to improve their practices. (Gailble and Burns, 2005)

2. Open Lessons

In the open lessons approach, teachers design lessons and invite their colleagues or some teachers from other schools to observe their lessons, and the feedbacks from invited teachers will be given in a post-observation session.

When using open lessons approach, it can help teachers share their experience of designing and assessing lessons in public in the school level, and from the observation, they get benefit mutually. The video can also be used to record the teachers' activities for their viewing or being placed on the World Wide Web as demonstrations. (ibid)

3. Lesson Study

In the lessons study approach, teachers plan, develop, or improve a lesson together, and then they field test the lesson; observe it; discuss it; make changes and collect data to see the impact of the lesson on student learning. The approach is based on collaborative behavior, in contrast to open lessons model which will focus on teacher's action, but the lesson study will more focus on students' actions.

When using lesson study approach, it can help teachers better understand the curriculum design process; help teachers learn from and with one another in a collaborative way; help teachers build communities of learning and practices which is also a strategy of sustaining teacher skills.

ICT can be totally integrated into the lesson, not only as the information added but also as a tool to learn with. (ibid)

4. Study Group

In the study group approach, teachers (in the same subject) can make a group, and they create and implement a plan to solve a common problem and fulfill a common goal. The approach is goal oriented and peer-based learning, so it can promote whole-school collaboration and communities of practice. ICT can help teachers to find

information from websites, create information using office software, instant messaging, email, blogs etc. to communicate within and across schools. (ibid)

5. Inquiry/ Action Research

In the inquiry/ action approach, teachers who have a common interest on one topic or a problem form a group; they investigate and research the problem, and plan possible actions to remedy it; then take action, observe and document results, reflect on outcomes, and create an action plan to address this problem. The approach help teachers become more thoughtful practitioners and empower them to take action, search for questions and solve problems. With ICT integration, it can help teachers find more information, share and communicate more widely with peers who have common interests. (ibid)

6. Case Studies

In the case studies approach, teachers in a team examine each factors of classroom instruction, and observe, discuss, reflect, and transfer their learning to their own classroom. Case studies approach is different from open lessons approach, because it involves more in-depth analysis of all elements of instruction. Video and internet applying can support the analysis of teachers' case studies. (ibid)

7. Mentoring

In the mentoring approach, older or more experienced teachers will guide and assist younger or novice teachers in all areas of teaching. Mentoring is popular among teachers, because it is helpful to promote “new” teachers confidence, and reduce their anxiety and sense of isolation. Mentoring is a useful approach to put the skills of novice teachers into practices. ICT integration can provide support at any time and any location by using email, online chat, cell phones etc. (ibid)

3.) Pros and cons of self-directed TPD

Self-directed TPD is a challenge for most teachers, because the final goal of it is to make teachers become models of lifelong learners. The disadvantage of the model has been discussed in Chapter two, but with ICT integration, the on-line communities of teachers can provide support in professional development across a range of subject areas and themes. (Pelgrum and Law, 2003)

3.3 Implementation strategies for “care for old and encourage new”

ICT is the new element for education reform and change, as well as for teachers’ professional development. Some emergent practices will replace or supplement the existing ones, but the change has to be gradual, and care and respect must be given to existing practices and organizations.

As Plomp (1996) pointed out, *“To initiate an emergent practice it takes creativity, to maintain its development and bring the experience to useful results it takes endurance, but to keep up the intention of replacing existing practices it takes courage”*. The implementation of ICT in schools will need to bring in new practices and new forms of professional support and education so that ICT can be used to support traditionally important teaching practices (‘care for old’) as well as the development of emergent teaching practices. (‘Courage for new’) Plomp also gives us some useful implementation strategies to ‘care for new’ and ‘courage to new’. (Plomp et al, 1996:32)

Implementation strategies to encourage the use of ICT in traditionally important teaching practices (‘**as care**’) would include:

- the provision of training on baseline technology skills for teachers and students;
- the provision of a good technology infrastructure, including computer access and network connectivity, to teachers and students;
- challenging the teacher education institutions to systematically integrate ICT into the teacher education programs, as well as to become actively involved in supporting the change process;
- the establishment of centers for learning technology in teacher education institutions to support the systematic integration of ICT for educational purposes within these institutions as well as in the school affiliated to them

Implementation strategies to support the development and widespread adoption of emergent teaching practices (‘**as courage**’) would include:

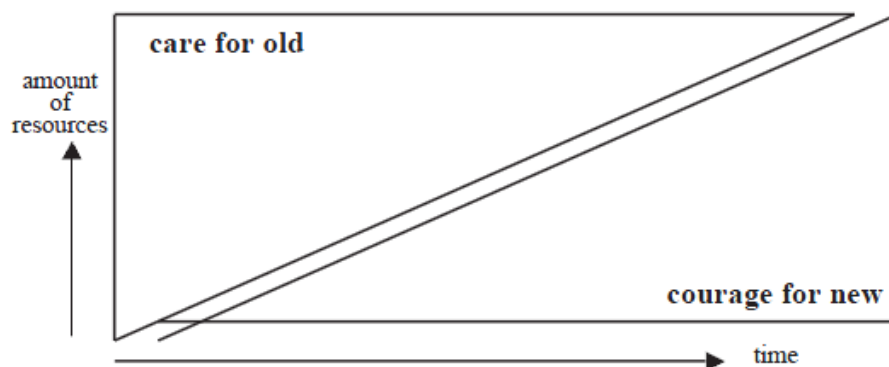
- the stimulation, solicitation and funding of project proposals that aims to create examples of desired future arrangements of an education that integrates the use of ICT in ways that would

develop students' lifelong learning abilities and move schools in the direction of a learning organization

- the establishment of experimental teacher education programs to develop new approaches to teacher education with the aim to transfer knowledge and experiences to regular training programs

- to encourage universities and research centers in research integrated with programs of action on the use of technology in education to develop an adequate knowledge base to guide school efforts

Figure 5 “New” replaces “Old”



(Source: Plomp et al. 1996 cited in Pelgrum and Law, 2003)

3.4 The current issues of TPD in China

3.4.1 Chinese education reform

China has made huge strides in educating its population. From 1978, Chinese education entered a new era of progress. From then on, the Central Committee of the Communist Party of China (CPC), the State Council, the National People's Congress, Ministry of Education (MOE) and local governments contributed their efforts together to promulgate a series of educational law and documents to improve the education development of China. After all these years of continuous endeavors, Chinese education reform has got some achievements and some key points have to be drawn our attentions. The research is based on the basic education level, so the focus will be placed the development of the nine-year compulsory education system in China.

1.) Main achievements of education reform

I. The right to education

In China, nine-year compulsory education was defined by law. Child at the age of six has to go to school and receive education. In 2008, there are 358,555 regular Junior Middle Schools and Primary Schools in China. The total enrollment number of primary school and junior middle school was 103,315,122 and 55,741,542 respectively. By the end of 2003, the coverage of nine-year compulsory education has reached 91% and the eradication of illiteracy among the middle-aged and young people has been realized totally by the end of 2000.⁶

II. Equality in education

The problem that all the children should have schools to go to has been solved by and large now. The Chinese government also made strenuous efforts on equality education. The investigation shows that the obvious improvements have been got in the sexual, regional difference especially in the western under-developed regions and education of minority ethnic group. (UNESCO reports, 2004)

III. Quality education and course reform

From 1993, quality education became the main object of Chinese education reform. Quality education required the changing roles for teachers and students, and it emphasized the student-centered teaching instruction in the classroom. Quality education also put forward national curriculum reform and teachers' in-service training. *Experimental Plan for Course Configuration of Compulsory Education and Course Stands* was adopted in most provinces of China. The new standards have deepened and strengthened the development of quality education. (UNESCO reports, 2004)

IV. System reform and education input

Chinese education reforms have re-organizing the educational structure and adjusted educational management. The local government and schools have got more autonomy in education decision-making. Chinese Prime Ministry – Wen Jiabao made the

⁶ The statistic is from www.edu.cn

government report in the Eleventh National People's Congress in March 2012, and he announcement that national financial investment on education would accounts for 4% of Chinese GDP this year. (ibid)

In accordance with the strategic arrangement of the 17th Communist Party of China National Congress (2007), *the Outline of China's National Plan for Medium and Long-term Education Reform and Development (2010-2020)* was promulgated in July 2010.⁷ The Plan stressed to “give priority to education and turn China into a country rich in human resources”. The Plan is also formulated to enhance citizens' overall quality, boost educational development in a scientific way, and speed up socialist modernization.

2.) **New direction of education reform** is to realize and accelerate informationization in education according to *The Plan*. (www. edu.cn)

I. Speeding up information infrastructure construction

The Plan mentioned that attention shall be given to the revolutionary impact of information technology on education development. Education informationization should be put into the state strategy for comprehensive informationization, and education information networks should be arranged in advance. By 2020, all schools in urban and rural areas shall be covered by a nationwide online educational service network, so as to promote modernization of teaching contents, pedagogy and methodology. (ibid)

II. Developing and applying more quality education resources

It is essential to intensify development of online teaching resource system, introduce quality international online teaching resources, develop an online learning curriculum, construct e-libraries and virtual laboratories, build open and flexible public service platform on education resources, promote the popularization and public sharing of quality education resources, and renovate the mode of e-education to push high-quality, high-level distance education. (ibid)

III. Building state education information management system

⁷ The following will be referred to as “*The Plan*”

Informatization of government administration over education shall be promoted, so as to accumulate basic data, grasp the overall situation, intensify dynamic monitoring, and raise administrative efficiency. (ibid)

3.4.2 The current situation of TPD in China

The development of Chinese education was witnessed by all, and teachers play a very important role to implement the educational reform, so teachers' core role cannot be ignored in China. From history perspective, teachers are always respected by people and some honorable titles were given to them such as "glorious gardener" and "engineer of the human soul". Teachers are known as those who have abundant knowledge and high level of moral value, and people expect a lot to teachers. Due to "one-child" policy, child is given more attention in the family, and parents also put more concern on the quality of education and teachers. Some parents even think that a good teacher can play a vital impact on their children's development. Therefore, teachers' quality and development are also a major concern of current educational reform in China. The following three points should be considered about teachers' professional development.

1.) Legislations for teachers

On October 31, 1993, "*Teachers Law of the People's Republic of China*" was promulgated. This Law is formulated for the purpose of safeguarding teachers' legitimate rights and interests, building up a contingent of teachers who are sound in moral character and good in professional competence, and promoting the development of socialist education.⁸ This law gave some requirements on teachers' social status, qualifications and competences responsibilities legislatively and systematically. According to the Teachers Law (1993), the teachers' qualification standards at secondary school level are as follows:

...to obtain qualifications for a teacher in a junior middle school, or a teacher for general knowledge courses and specialized courses in a primary vocational school, one shall be a graduate of a specialized higher normal school, or other colleges or universities with two or three years' schooling or upwards.

⁸ Source is from http://www.moe.gov.cn/publicfiles/business/htmlfiles/moe/moe_2803/200907/49852.html

From 1987, September 10th was designated as “National Teachers’ Day”. The Chinese Government made great efforts to teachers’ development.

2.) Approaches for teachers’ professional development

There are two main approaches for teachers’ professional development: teachers’ education system and in-service training. In China, teachers usually graduates from normal universities, colleges or schools, where various area of ‘subject knowledge’ such as psychology, pedagogy and methodology are offered for student teachers besides some specific relevant subject knowledge. (Zhong, 2004) After their graduation, from the regional/ district level or school level, some in-service training is also provided. The three models of TDP in the previous chapter were widely adopted in most schools, but of course there are some specific situations in different schools, so the chapter five will analyze them in details.

3.) New aims for teachers’ professional development

From some research on teachers’ professional development shows that although teachers’ professional development has made many achievements in China, there are still some problems which draw our attention. (Zhong, 2004; Cheng, 2005)

- I. From the teachers' professional education background, the qualifications of teachers are too low especially in some rural regions in China. Some teachers don't attain the basic standard of teachers.
- II. From the teachers’ professional ethics, some teaches are lack of self-discipline, and they don't have their correct attitude to morals of teachers or reduce their ethics standards as teachers, so some physical punishments on students still happened in some schools.
- III. From the knowledge updating, some teachers are lack of initiatives. Under the traditional educational system, the main tasks of teachers still involved with students grades. Some teachers are unwilling to study some knowledge about technology in the education.

Based on these problems, MOE of China stressed some new aims to teachers’ professional development. MOE of China continuously promulgated a series of law and regulations to strengthen to build a vast contingent of quality teachers, such as, in 1998, *Teachers’ qualifications regulations*, in 2008, *Primary and Secondary Teachers’ Professional Ethics Standards*, and in 2012, *Educational Informatization Ten-year Plan*. (www.moe.gov.cn)

Chapter five will analyze the concrete implementing situations of TDP from the top-down government policy based on the chosen research site

Chapter 4 Methodology

子曰：“敏而好学，不耻下问。”

——孔子《论语·公冶长》

The Master said, "He was of an active nature and yet fond of learning, and he was not ashamed to ask and learn of his inferiors! -- On these grounds he has been styled WEN (knowledgeable) ."

Confucian Analects Book V: Kung-Yê Chang Chapter14⁹

4.1 Introduction

After reading the literature on a topic that you are interested in, you may think what it will be reflected in modern social life, or whether there is an unresolved issue in the literature, so you will draw up some related research questions and think to begin the social research. If you have read a great deal around your subject, and you also have had a working knowledge of the literature about your topic, the next step for you is to employ some research methods to carry on your social research. (Bryman, 2008)

According to Bryman (2008), the training in research methods will offer you:

- I. The training in research methods makes you aware of the range of research methods that can be employed to collect data and the variety of approaches to the analysis of data.
- II. The training in research methods provides you with an awareness of the ‘dos’ and ‘don’ts’ when utilizing a special approach to collecting or analyzing data.
- III. The training in research methods provides you with insights into the overall research process.

⁹ http://www.cnculture.net/ebook/jing/sishu/lunyu_en/02.html

IV. The training in research methods provides you with an awareness of what composes good and poor research.

In this chapter, firstly it will give some briefly introduction about two approaches to social research, and then a qualitative research strategy and a case study design will be employed to explore issues of TPD with the use of technology in a junior middle school of Shanghai. The semi-structured interview was conducted for collecting data, and finally an introduction of the research site and participants will be presented as well.

4.2 Social research strategies

From Bryman's (2008) point of view, the term 'social research' indicates the academic research on topics relating to questions relevant to the social scientific fields, such as sociology, social policy, education etc. The present study is mainly carried out in the educational field, and the purpose of the study is to improve one aspect of educational practices by describing the development of knowledge. Educational research has the following characteristics normally: objective, precise, verifiable, explanatory, empirical, logical, and probabilistic. (McMillan and Schumacher, 1997)

The terms 'quantitative' and 'qualitative' are used frequently to identify different approaches to social research. Both quantitative and qualitative research studies can be conducted in education, but the most obvious distinction between quantitative and qualitative research is the way of data presentation. Quantitative research introduces statistical results represented with numbers; qualitative research presents facts in narratives with words. (McMillan and Schumacher, 1997, p.14)

Besides the form of data presentation, the fundamental differences between these two approaches are also linked to three sections: the connection between theory and research, epistemological considerations and ontological considerations (Bryman, 2008)

Quantitative research can be interpreted as a research strategy that stresses quantification during the data collection and analysis, and the results are usually based on numerical and statistical data. Quantitative research is a deductive theory-testing approach, which has incorporated the practice and norms of the natural scientific model, in particular, positivism of

a natural science epistemology, and embodies an external and objective view of social reality. (Bryman, 2008, P.22)

By contrast, qualitative research emphasizes words rather than quantification in the data collection and analysis. Qualitative research is an inductive theory-generating approach, which has rejected the practices and norms of the natural scientific model, but it employs an interpretive epistemology, and embodies a constructive view of social reality as a constantly shifting emergent property of individuals' creation. (Bryman 2008, P. 22)

Although there are fundamental differences between quantitative and qualitative research, as two approaches to the social investigation, there are still some similarities between them. The common purpose of both them is to try to answer the research questions by analyzing the relating data to the research literature.

Bryman (2008) pointed to that research strategy and methods should be appropriate to the research question. According to Patton's (2002) point of view, qualitative research can help study carry on in deep and detailed way. Typically, qualitative research strategy can produce a great amount of detailed information from a much smaller number of people and cases, and these detailed collected data can increase the depth for understanding of the case and situations. Qualitative researchers are seen as using words to interpret the analysis of society, and they show the points of view of participants by having the interview among the focus group. (Bryman, 2008, P.393)

The current study fulfills the nature of qualitative research, which attempts to answer the research questions using the deep and detailed information by having conversation with a small group of teachers in Shanghai Jiuting middle school. From their practical teaching experience and their opinions to TPD with ICT integration, the study can make better understanding how the teachers face their changing role and find the suitable models of TPD for themselves in the information age. It is also expected that by using this approach, which could facilitate the current study in-depth understanding of the participants view on how to improve efficient and effective TPD by using technology from their perspectives.

4.3 Research design

Bryman(2008) gave the definition of research design which can provide a framework for the data collection and analysis. There are five different research designs: experimental design;

cross-sectional or survey design; longitudinal design; case study design; and comparative design.

Case study design

A case study design will be chosen as a research design of the present study. There is a tendency to associate case studies with qualitative research. A case study requires the detailed exploration of a specific case which will be investigated with the detailed and intensive analysis. As Stake (1995) observes, case study research is linked to the complexity and particular nature of the selected case in question. The 'case' can be as a single community, a single school, a single family, a single organization, a person and a single event. (Bryman, 2008)

A case study provides an opportunity for one aspect of a problem to be studied in some depth. Yin (1994) reminds us that case studies have been done about decisions, about programs, about the implementation process, and about organizational change.

The present study will be carried on in one school, and the main aim of the study is to investigate the situation of TPD in the selected school and the implementation of ICT in the education, especially from the school level, the organizational change involved with teachers changing role and teachers development.

Furthermore, Yin (1993) has identified three types of case studies: *Exploratory*, *Explanatory*, and *Descriptive*. Stake (1995) included three others based on that: *Intrinsic* - when the researcher has an interest in the case; *Instrumental* - when the case is used to understand more than what is obvious to the observer; *Collective* - when a group of cases is studied. Exploratory cases are sometimes considered as a prelude to social research. Explanatory case studies may be used for doing causal investigations. Bassey (1999) described exploratory case studies as theory seeking and explanatory case studies as theory testing.

From the above description, the present study belongs to explanatory and instrumental case study, because the widely used three models for TPD have already been reviewed, but with the emergence of ICT integration, a new theory will be testified, which is also employed to investigate whether it is applicable for the selected case in the Chinese context and to support previous literature by generating correspondent findings.

A case study is also known as a triangulated research strategy. Snow and Anderson (cited in Feagin, Orum, & Sjoberg, 1991) claimed that triangulation can occur with data, investigators, theories, and even methodologies. The following will discuss the employed research method for data analysis in detail.

4.4 Research methods of data collection

Research methods are selected because they will provide the data you require to get some finding and fulfill the whole study. Patton (2001) pointed out qualitative findings stemmed from three kinds of data collection: 1. in-depth, open-ended interviews; 2. direct observation; 3. written documents. In order to generate useful and credible qualitative findings through these types of methods of data collection, it needs discipline, knowledge, training, practice, creativity and hard work. (Patton, 2001, P. 4) The present study will utilize two types of them: semi-structured interview and document analysis, but the main sources of data are from semi-structured interview by telephone or QQ. (a kind of Chinese (mainland) popular communication tool via internet the same as MSN and Facebook)

4.4.1 Semi-structured telephone interview

In the contemporary “interview society” (Fontana and Frey 2000:646, as cited in Patton, 2001, P340), everyone is familiar with the term “interview” very much maybe as an interviewer or an interviewee. Interview in the social research context will use direct quotation from people about their experience, opinions, feelings, attitudes and knowledge in order to elicit the information that the researchers need. (Patton, 2001) There are many types of interview according to different research strategy approach, and different approaches will use different types of interview form Bryman’s (2008) point of view. The present study chose qualitative approach, so the semi-structured interview will be employed. Because the author is in Norway now, but the interviewees from the selected case are all in China, the author will choose to conduct interview by telephone or QQ from the consideration of distance and convenience.

The following consists of two parts: one is the reason why author chooses semi-structured interview and what the advantages of semi-structured telephone interview are; the other will give the brief introduction about the procedure of the whole interview.

Comparing to the types of interview in quantitative research, qualitative research often uses unstructured interview and semi-structured interview. A semi-structured interview refers to that the researchers has a list of questions which are covered by some specific topic and directed by an interview guide, but the interviewee has a lot of leeway in how to reply. Questions may not follow the routine outline of the schedule and some questions may add in during the interview according to interviewees' reaction. But, generally speaking, all the questions in the interview guide will be asked and the similar words will also be used among all the interviewees. (Bryman, 2008, P. 438)

Some remarkable features of semi-structured interview have to be mentioned:

- I. The interview's interest is in the interviewee's point of view.
- II. Rambling or going off at tangents is often encouraged in order to give insight into what the interviewee sees or feel as a relevant and important, rich and detailed answers that the researcher wants.
- III. The interview is more flexible, which the interviewer can adjust the emphases during the interview conducting.
- IV. The interviewee can be interviewed more than one time in the semi-structured interview.

(Bryman, 2008, P. 437)

Based on the above, the semi-structured interview can help the researcher get in-depth responses by conversational interchange.

The preparations and process of the interview are launched step by step. First, the cover letter and interview guide was prepared respectively. (See appendix I, II) The cover letter explains the main purpose and method of the current study, and there are ten questions in the interview guide which are related to the research questions of the current study. Second, the author sent both of them using the documents of Microsoft Word as the attachment by email to the headmaster of the selected school in Shanghai of China and asked him whether he can help her hand out the documents to the teachers. With the help of the headmaster, 12 teachers including the headmaster agree to have an interview with the author, after they received the written documents. Third, make the appointment with the interviewees, and the time of the interviews varied according to the interviewees' requirement, but most of interviews happened between 8pm and 10pm of local time in China, and most interviews lasted 20-30

minutes. The interviews were conducted by using internet telephone software such as Skype or Voipcall, if the computer is available to interviewees, the voice chat tool of Skype, MSN or QQ is also employed. Because the participants are all the former colleagues of the author, so the frequent contact still goes on after the interview. During the interview, all the contents of conversation will be recorded.

It is a pity to have the interview by telephone, which is lack of interviewer's observation, because interviewer and interviewees cannot have the conversation face to face.

4.4.2 Documents analysis

Document here refers to written materials and other documents from organization, official publications and reports. Yin (1993) point out documentary evidence is an important and confirm source for data collection. The current study is concerned with implementment of Chinese education reform, especially, on teachers' professional development with the use and help of technology, so some policy, law or official document from central and local government and some statistics data will be needed as primary source of data.

4.5 Methods of data analysis

Bryman (2008) provided us two general approaches to qualitative data analysis: analytic induction and grounded theory. The qualitative data of the present study mostly derives from some narrative unstructured textual materials which based on interpreting transcription of interviews, but these fragments are not straightforward to analyze. The ground theory approach is employed in the present study where coding is a key process and categories are generated in the process.

After finishing the interview, the following steps were done by the investigator.

- I. Firstly, all initial answers of interviewees were transcribed based on the content of recorder cassette during the interview.
- II. Secondly, the Chinese transcriptions were translated into English version.
- III. Thirdly, the significant statements and phrases were extracted from the transcription according to the interview guide. The answers were grouped into different categories on the basis of interrelationship of interview questions.

IV. Fourthly, the extracted statements and phrases were coded and relationships between categories were explored in order to make the hypotheses about connections between categories emerge.

V. Fifthly, the coded statements and phrases were reviewed again and more general theoretical ideas were considered.

As is shown in Appendix I, the interview guide is made up of ten questions. Questions 1 and 2 will examine the current situation of teachers' status and qualification requirement in China. Questions 3 and 4 will investigate the employed models of TPD in selected research site. Questions 5-9 will explore the changes of TPD with ICT integration, which are keys issues related to the research questions. The last question is concerning about participants' suggestion to TPD with or without ICT integration. In analyzing data, answers are organized, extracted, summarized and categorized so that the key data are available at a glance for systematic investigation. Findings are then discussed to answer the research questions of the study.

Some documents from the official reports are also another data source and will also be quoted directly and be analyzed to relate to the research questions.

4.6 The research site

In Chapter one, the background introduction of research site has already been given, so the following will focus on some basic information of teachers and infrastructure of the school.

Shanghai Jiuting middle school is a public middle school in Shanghai. There are 107 registered teachers and staff in Shanghai Jiuting Middle School. The average age of teachers is 37 years old. The main teaching subjects are English, Chinese, mathematics, physics, chemistry and politics, which will have the exams at the end of semester. The other subjects are classified into the comprehensive group which includes science, drawing, music, calligraphy, sports, art and craft, society, computer and information technology, history, geography, biology and psychology, and these subjects don't give scores to students. In order to expand and explore skills of students, two practical activities for students are provided such as, aircraft model and cooking. These subjects are set up according to requirement of quality education- the policy of central government. There are seven teaching group according to the

teaching subjects, but the teachers offices are divided according to the grade (Nianji). There are four grades and 25 classes in all in Shanghai Jiuting middle school. Almost all of the subject teachers have finished undergraduate study, which includes 68 teachers who have bachelor degree (63.6%); 24 teachers who obtained undergraduate degree after teachers training (22.4%); 4 teachers who have master degree (3.7%); 2 teachers who passed the self-study undergraduate courses (1.9%); 4 teachers who finished senior vocational high education (3.7%); 4 service staffs (3.7%) graduated from senior high school and only one graduated from junior middle school. (1%)

Shanghai Jiuting middle school has two computer rooms, and there are 350 desktop computers totally. Each teacher has his own computer in his office and each classroom is installed with projector, computer and multimedia equipment. Shanghai Jiuting middle school has its own webpage, local area network. The network connection is covered the whole school. The website includes several main forums which are information publication, teaching researches, school administration, teaching material resources etc. The website also provides a communication platform for teachers.

4.7 Participants

There are twelve participants involved from the research site in the present study. Some categories are set by considering of research questions. The demographic information of the participants is demonstrated in Table 1. in the sequence of interviews. Pseudonyms are used for the assurances of participant confidentiality.

Table1. Profile of the participants

Participant	Gender	Age	Local from Shanghai	Professional Title	Teaching Subject	Length of Teaching	Education Background	Position in School
1.Adam	Male	49	Y	Senior	No	28	Obtained undergraduate after teacher training	Headmaster
2.Ben	Male	39	N	Senior	Politics	15	Bachelor	Middle Administrator
3.Carl	Male	39	N	Senior	Physics	15	Bachelor	Middle Administrator
4.David	Male	51	N	Senior	Mathematic	30	Obtained undergraduate after teacher training	Teacher
5.Alice	Female	33	Y	Intermediate	Chinese	11	Bachelor	Class Teacher &Teacher
6.Nancy	Female	46	N	Intermediate	English	24	Obtained undergraduate after teacher training	Teacher
7.Mary	Female	38	N	Intermediate	English	15	Bachelor	Class Teacher &Teacher
8. Tom	Male	43	Y	Intermediate	Calligraphy	22	Obtained undergraduate after teacher training	Teacher
9.Jack	Male	32	N	Intermediate	Computer Science	8	Bachelor	Teacher & Network Administrator
10. Mark	Male	45	N	Intermediate	Geography	21	Bachelor	Teacher& Leader of Comprehensive Group

11.Kevin	Male	28	N	Primary	Drawing	2	Master	Teacher
12.Rose	Female	48	N	Intermediate	Chemistry	26	Obtained undergraduate after teacher training	Teacher

Chapter 5 Data Results and Analysis

子曰：“知之为知之， 不知为不知， 是知也。”

——孔子《论语·为政》

The Master said, “When you know a thing, to hold that you know it; and when you do not know a thing, to allow that you do not know it: this is knowledge.”

Confucian Analects Book II: Wei Chang Chapter17¹⁰

5.1 Introduction

Data analysis should be established on the basis of original and true facts with objective attitude, as Confucian mentioned above. Say yes if you know, and say no if you don't know. There should be no pretense in the profession of knowledge, and especially don't feel ashamed of admitting the ignorance.

This chapter will present and analyze the collected data from interviews and some official documents. The responses from the participants will be summarized and categorized in accordance with the interviews questions. According to the sequence of interview questions, the following categories are formulated and organized: 1.teachers' social status and qualification; 2.adopted approaches of TPD in Shanghai Jiuting middle school; 3.TPD with ICT integration which includes new competences and skills of teachers, difficulties and obstacles, reasons for difficulties and obstacles; 4.self-development plan for efficient and effective TPD.

5. 2 Teachers' social status and qualification

Teacher as an occupation appeared with social progress and development. The aim of a teacher is to impart knowledge and causes students' learning. Due to the occupation's particularity, in people's mind, teacher is regarded as the most brilliant career in the sun. “Zun

¹⁰ http://www.cnculture.net/ebook/jing/sishu/lunyu_en/02.html

Shi Zhong Jiao” (respect teacher and emphasize education) is always a tradition in China. The following will investigate the current situation of teachers’ status of Shanghai Jiuting middle school and summarized the different level of teachers’ qualification.

5.2.1 Teachers’ social status

In order to find out teacher’s social status, the following points will be considered, such as teachers as professionals, teachers’ working conditions and benefits.

1.) Recognition as professionals

Twelve participants all agreed that teachers should be regarded as professionals like doctors and lawyers, but when they were asked about irreplaceability of teachers, they held different opinions.

Carl said:

In my own case, I teach Physics, and I think that the physics knowledge that I learned in the junior and senior middle school, which is enough for me to teach in the classroom now, so everyone graduated from the university, if his scores in some subject is good, he can teach this subject.

However, Rose thought differently, and she said:

Although the relevant knowledge of some subject is important for teachers, the methods of teaching are more important. I have taught for 26 years, when I have lessons on the same topic each time in the classroom, and I will choose different teaching methods according to students’ reaction. In order to make students understand better, I will explain it in a simple word, and sometimes I will also give them some examples from my experiences. The process of teaching is a kind of interaction between students and teachers, and only having some knowledge is not far more enough for teachers. Special teaching methods, pedagogical and psychological theory, and some practical experience from teaching all contribute to a good teacher. Teachers as professionals are irreplaceable.

Most interviewees have rather vague opinions about irreplaceability of teachers. As Alice described that “sometimes I really don’t feel any special as a teacher, it seems that everyone

can do what I do now, but sometimes I still think what I do is very important, especially when I saw the achievement of my students”.

2.) Working conditions

The State Council of P.R.C. promulgated *‘New regulation on the staff and workers’ working hours in China’* in 1995, and Article III of the Regulation pointed out clearly “...workers work 8 hours per day, and 40 hours in a week.” And in Article VII, “...Saturday and Sunday are both rest day for the week that means Saturday and Sunday as public holidays...”¹¹

The working time in Shanghai Jiuting middle school is from 07:20 to 16:25 on weekdays. They work 9 hours and 5 minutes on weekdays.

Shanghai government and Shanghai education department sent notifications about *‘...prohibit all primary or middle schools from having extra classes during the public holidays’* at the beginning of 2005.¹²

The teachers from graduating class (Grade Nine) are still having lessons on the morning of Saturday in Shanghai Jiuting middle school.

Nancy said:

We have no way to choose, and we must have an extra lesson at weekends in order to improve the students’ scores and raise ‘shen xuelv’. (Proportion of students entering senior high school)

If you are ‘class teacher’ (a teacher is in charge of all affairs of one class), you must have home visit for each student from your class after work.

Mary complained:

My husband told me that he almost forgot what my appearance looked like. When I get up to go to school at six in the mornings, he is sleeping, and when I finished home visits and arrived home at ten at night, he already went to bed...

¹¹ Sources from http://w1.mohrss.gov.cn/gb/ywzn/2006-03/02/content_108641.htm

¹² Sources from <http://www.shmec.gov.cn/html/article/200502/18593.php>

Each subject teacher must have 12-14 lessons in a week and the main subject teachers refers to those who teach Mathematics, Chinese, English, Physics, Chemistry and Politics, and usually they have lessons for two classes which consist of over 90 students, and besides having two or three lessons each day, their daily working tasks also include to correct students' homework; prepare teaching plan and materials; design and correct exam papers. Each class has his own class teacher who is responsible for the discipline of the class, having talks with parents of students, coordinating with other teachers, rectifying norms of students' behavior, writing comments for each student at the end of semester. One of subject teachers usually is selected to act as the class teacher.

The participants showed that longer working hours and heavy workload are main problems and pressure for them in Shanghai Jiuting middle school.

3.) Teachers' salaries and benefits

The statistics from Shanghai Statistics Bureau in 2010 shows that the average annual wages of staff and workers in Shanghai is 46,357 RMB Yuan and the average annual wages of education sector is 72,778 RMB Yuan. The highest average annual wages is from financial industries about 161,126 RMB Yuan.¹³

The average annual wages of Shanghai Jiuting middle school is around 70,000 RMB Yuan. The annual wages of teachers are connected with positions in the school, teaching subject, the length of teaching, and professional titles. The highest and lowest of annual wages are 120,000 RMB Yuan and 45,000 RMB Yuan respectively.

Kavin is a two- year teacher and he is not native person in Shanghai. His wage is around 55,000 and he said: "...after paying for the rent and living expense, I almost left nothing each month."

Alice is native person in Shanghai and her wage is around 75,000 RMB and she said: "I am lucky, because my parents gave me the help, when I bought the apartment, but I have to pay the loan myself."

¹³ Sources from <http://tjj.sh.gov.cn/tjnj/nje11.htm?d1=2011tjnje/E0905.htm>

When the participants were asked about teachers' benefits, they all said they didn't feel any special benefits which differed from other occupations. If something has to be mentioned, we have almost three months holidays' salaries, Jack added. David also mentioned that each teacher can have an extra allowance about 200 RMB Yuan on Teacher's Day every year.

Although the wages of teachers were improved a lot, most teachers still feel huge pressure when they are facing high prices of buying apartment and high living expense in Shanghai.

5.2.2 Teachers' qualifications

1.) Teachers' certificates

According to recruitment regulations of Shanghai Jiuting middle school, the 'new' teacher has to attain the following new basic requirements¹⁴:

- Candidates must graduate from Normal University of province, and have a bachelor degree or above.
- Candidates' Putonghua (Chinese mandarin) level must reach B of Secondary Level
- Candidates must have a teacher certificate which means that the candidates must pass the exams of pedagogy and education psychology before graduation from the university.
- Candidates must have the passion to be teachers and they are in physical and mental health.

From the above requirement, we can conclude that the requirement for the teachers will become higher and higher by contrast with requirements of previous time. Before the candidates come into teacher career, they have to prepare themselves from knowledge and spirit.

2.) Teachers' Professional Titles

There are four categories about teachers' professional titles (zhicheng) in the middle school after they became teachers. They are primary level, intermediate level, senior level and special grade level. When the novice teachers passed one-year probationary period, they will get the title of primary level directly. The basic requirement for intermediate level is to engage in teaching for more than five years and has primary title at least four years in a

¹⁴ Sources from <http://www.jtzx.sjedu.cn/xxgl/szpz/201110/70176.shtml>

middle school. If you want to get the senior title, you must be a teacher with intermediate title for ten years. The special grade title should be approved by nation.

Besides the teaching time requirement, before each promotion for a higher title, teachers also need to complete or publish some papers involved teaching research and pass certain examinations of training, for example, computer information technology.

There are four teachers with senior title, seven teachers with intermediate title and one teacher with primary title among twelve participants. 44.87% teachers got intermediate title or above in Shanghai Jiuting middle school.¹⁵ Because title and wages of teachers have a great connection, many teachers have to prepare themselves actively for all kinds of materials that they need according to requirements in advance.

5.3 TPD practices in Shanghai Jiuting middle school

As Chapter two and three mentioned before, Gaible and Burns (2005) divided TPD into three broad categories: Standardized TPD, Site-based TPD and Self-directed TPD. TPD practices in Shanghai Jiuting middle school will be investigated from national, district and school aspects.

5.3.1 National level

TPD practices from national level are mainly for implementing new education policy and theory, new curriculum reform and some hot key issues of education. The main groups of national TPD consist of directors of education bureau of provinces or cities, headmasters, middle administrators and selected representatives of backbone teachers from different middle school. The main forms of national TPD include conferences, lectures, workshops and short-term courses. National TPD is a kind of centralized training. Adam is headmaster of Shanghai Jiuting middle school, and he said he just finished the training for headmaster of primary and middle school all over the country. He thought this kind of training is good and helpful to understand the main aim of new education policy, after training and discussion with headmaster from other schools, so he comment:

... I can bring back the new better teaching ideas and management experiences to our own school, and based on that, it is helpful for me to make better administration

¹⁵ <http://www.jtjx.sjedu.cn/xxxxgk/xgk/qt/tjsj/201110/28952.shtml>

methods to improve teaching and teachers training, which will combine with the practical situation of our own school.

He also mentioned that a work conference will be held for headmasters by television and telephone at the beginning of each semester and the content of the conference will guide the daily work of this semester.

National TPD usually can be carried out by long distance satellite television and telephone conferences and short-term central training in a special location. National TPD is responsible for the macro guidance for teachers.

5.3.2 District level

As chapter one mentioned, in the first stage of Chinese education reform, the main change is to give more autonomy in educational decision-making from the central government to the local government and schools. (Landowe ed., 2008), so training for TPD also adopts the principle of sharing responsibility.

TPD from district level mainly involves district education bureau, district in-service teacher training college and schools. District in-service teacher training college organizes different kinds of TPD for different schools according to the instructions and requirements of district education bureau. The types of district TPD are set up according to the teaching subjects and some related educational topics.

Shanghai Jiuting middle school locates in Shanghai Songjiang district, so Songjiang district in-service teacher training college is responsible for district TPD of all schools in Songjiang district. Songjiang district in-service teacher training college establishes different departments according to different teaching subjects and different types of schools which include kindergarten, primary school, junior middle school, senior middle school and adults' vocational school. The chiefs of different departments were teachers who engaged in teaching for long period time in schools before, and they are called master teachers with rich practical teaching experiences. The different chiefs are responsible for instructing teachers' training of different teaching subjects of all schools from teaching methods and teaching design to individual development and teachers' morality.

The types of district TPD consist of class observation, seminar and regular teacher training meeting. The chief will randomly observe one of teacher's lessons in their classroom, and then they will assess the teachers' practices and provide some feedbacks which include teaching plan and design, the layout of writing on the blackboard, speech in the classroom, interaction with students, teaching and curriculum purpose and results. The chief will also organized some teachers from different schools to observe the other teachers' lessons, after the observation, and the chief will arrange a seminar to assess and discuss the lesson of the observed teacher together. The regular teacher training meeting is usually held once a week in Songjiang district in-service teacher training college, and the representatives of teachers with the same subject of the same grade form different schools will present the meeting. The content of the meeting always is connected with making semester teaching plan and exams requirement. It is obligatory for teachers to take part in all kinds of district TPD. The promotion for higher professional titles is linked to the results of district TPD and school-based TPD.

The evaluation of participants to district TPD is good, and they all think it is helpful for their teaching, and the feedbacks from the chief can improve their teaching skill and methods.

Mark said:

"Although I am an 'old' teacher with 21 years of teaching, I still feel nervous when the chief come into my classroom, and the feedbacks from observer always give me some new inspiration and make me find some disadvantage I didn't notice before in my teaching practices."

Jack also consents "...it is valuable advice for new teacher and I can learn a lot from the chief's instruction."

Tom said: "... the observations class between different schools can strengthen the collaboration among teachers, and I don't feel isolated anymore."

The investigation shows that all participants are satisfied with the content and form of district TPD.

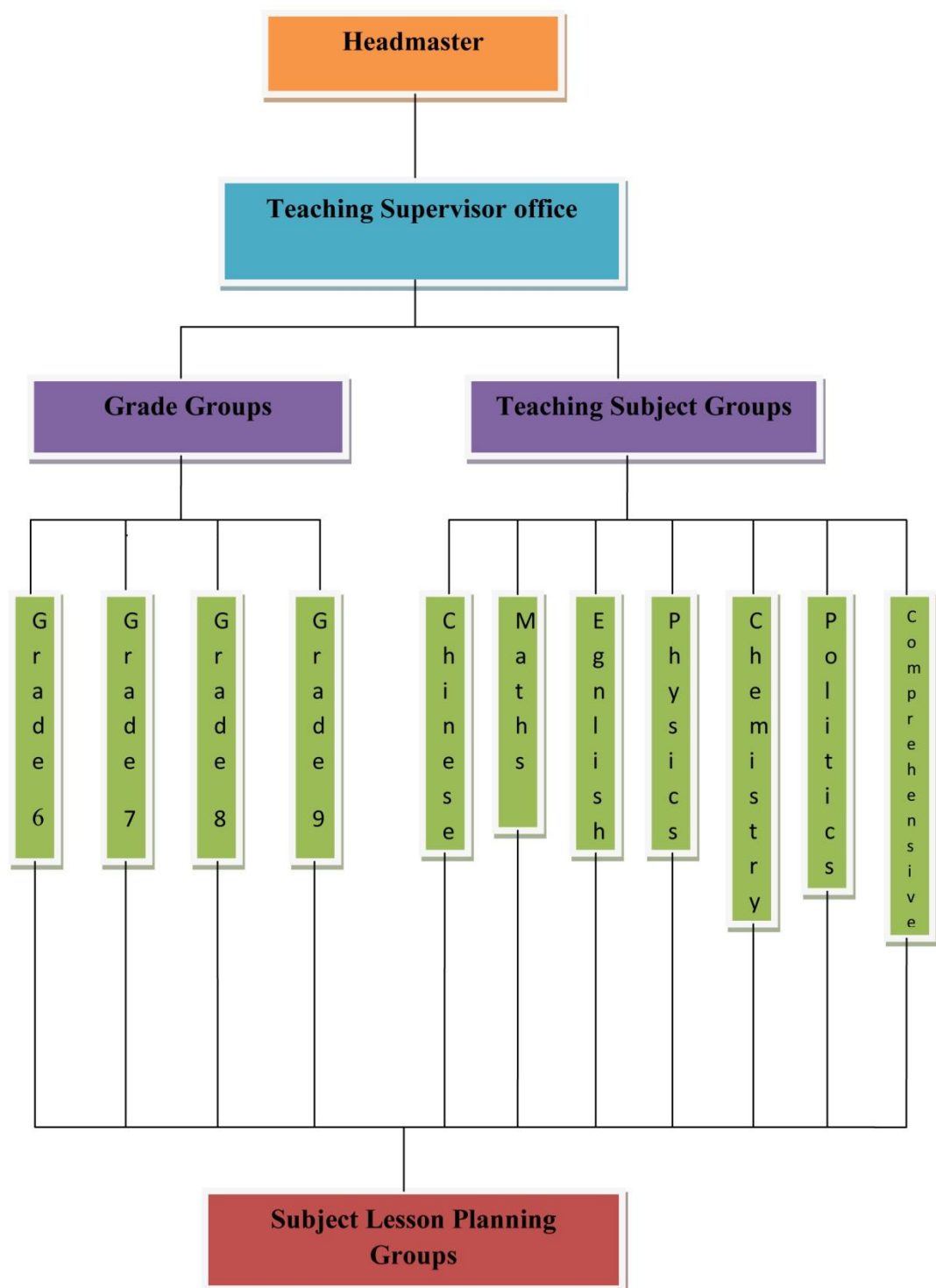
5.3.3 School level

School-based TPD is initiated by the school under the guidance of the co-ordination of higher education administrative departments. The school is in charge of the organization of TPD itself in order to meet the needs of the development goals of the school and teachers. Headmaster as the first responsible person to the school makes the school as a base and chooses the suitable school-based TPD methods autonomously according to the practical situation of all teachers and the school. The school establishes training objectives, training content, and training methods to solve practical problems and improve the teaching ability and skills of teachers. The school-based TPD is an effective approach to improve comprehensive quality of teachers.

Because school-based TPD is closely connected with the practical situation of the school and the needs of teachers, school-based TPD is widely regarded as a very important and useful approach.

In order to investigate how school-based TPD is operated in Shanghai Jiuting middle school, the organizational structure of Shanghai Jiuting middle school should be known firstly. The following figure (Figure 6.) shows different levels of administration and teacher groups. The headmaster is in charge of all the affairs of the school. He also has full responsibilities for the school's administration and implementation of national and local education policy and theory to the school. Teaching supervisor office has two parts: one is in charge of teacher's teaching and the other is responsibilities for students' enrollment and some affairs of administration. Grade groups are set up for teachers with all kinds of teaching subjects but in the same Grade (nianji) of one school year. There are four grade groups from Grade six to Grade nine in Shanghai Jiuting middle school and teachers' offices are usually arranged according to Grade groups, but the teachers of drawing, music, computer science, psychology and sports have their own teachers' office according to their teaching subject. Teaching subject groups form for teachers with the same teaching subject. There is a director who is responsible for all the affairs of teaching and research within one subject. There are seven teaching subject groups in Shanghai Jiuting middle school which includes Chinese teaching group, Maths teaching group, English teaching group, Physics teaching group, Chemistry teaching group, Politics teaching group and Comprehensive teaching group. Subject lesson planning groups are formed for teachers based on the same Grade and the same subject. Most activities of school-based TPD happen in the teaching subject group and its subsidiary- subject lesson planning group as well.

Figure 6 The Organizational Structure of Shanghai Jiuting Middle School.



Carl is the director of teaching supervisor office, and he introduced that: “Based on the teaching subject groups and subject lesson planning groups, the following three categories of TPD are divided and each category employs several approaches of school- based TPD in our school.”

1.) Master and Apprentice

‘Master and apprentice’ is mainly focusing on the development of novice teachers. Shanghai Jiuting middle school made a development plan for teachers with 0-5 years teaching experiences. Because the average age of Shanghai Jiuting middle school is 37 years old, the main object of TPD in Shanghai Jiuting middle school is to focus on the development of young and middle-aged teachers.

The employed school-based approaches consist of class observation, open lessons, lesson study, mentoring and study group. Master teachers who are older and have more teaching experience, they guide and assist younger novice teachers in all areas of teaching and sometimes the master teacher can also update his educational thoughts, theory and methods by collaboration with novice teachers.

Kavin is a participant who only has two-year teaching experience, he said: “... *master and apprentice gives me a lot of support, you know, there are some gaps between knowledge I have learned in the university and teaching practices in the classroom. After I watched the master’s lesson, I found some useful teaching skills and how to interact with students.*”

And Alice also mentioned: “*I am very glad to hear master’s suggestion, and sometimes their critical but instructive advice makes me realize some weakness in my teaching which I ignored before, and on the other hand, their approval and positive comments are also an impulse and encouragement to improve my teaching practices deeply. Mentoring helps me reduce the anxiety and sense of isolation.*”

In Mary’s opinions, “...*When I acted as the master teacher, I feel strong responsibility to instruct newer teacher, and at the same time, the newer teacher’s innovation ideas and methods also make me have reflection about the teaching practices of myself, which helps me break the routine and thinks some fresh ideas.*”

2.) Teaching Competitions

Teaching competitions on some topics are often held in order to improve some basic teaching skills and competencies of teachers. Several teaching competitions are held each semester in Shanghai Jiuting middle school. For example: Chinese teacher's speech competition and writing competition; making teaching design with PowerPoint (kejian) competition; the competition about the layout of writing on the blackboard; open lessons' competition etc.

Ben gave the comments to teaching competitions: *"a series of teaching competitions increased the sense of teacher's competition and stimulated the teacher's initiative, and some excellent lessons can be observed as a demonstration class later."*

Evaluators for teaching competitions are mainly headmaster, vice headmasters, middle administrators and directors of each teaching subject group.

3.) Teaching Researches

Teaching researches mainly concentrate on some teaching method, teaching theory, teaching design, or some common interest on education. The key research topic of Shanghai Jiuting middle school in 2012 is about "teaching and management by different level".¹⁶

The approaches of TPD for teaching researches mainly include lesson study, study group, inquiry/ action research, and case studies in Shanghai Jiuting middle school.

Lesson study is always combined with the approach of study group to carry out. Teachers from the same subject lesson planning group in the same grade often collaboratively make teaching plan and prepare the materials for the lesson together. They observed one another's lesson, and then gave the comments in order to improve the teaching methods and make changes in lesson plan and design.

Nancy found out: *"the same lesson plan, but in different class, has different effect..."*

Inquiry/ Action research is carries out under some common interest. As mentioned before, the main research topic is "teaching and management by different levels" in Shanghai Jiuting middle school. The school asks teachers to select their subsidiary topic based on the main research topic of the school, and they investigate and research it in their daily teaching practices.

¹⁶ Source is from <http://www.jttx.sjedu.cn/jxky/kygz1/kygl/201202/317174.shtml>

A case study is mainly for a lesson or a teacher. It is a long-term approach by contrasting with other approaches. It can investigate and develop the quality of a lesson and a teacher in details.

Ben introduced that the school made a three-year development plan for Alice this year, and the plan included sending her to take part in higher level training; inviting a education specialist to observed her lessons; and helping her on her teaching skills and ability with other colleague, etc. When Alice was asked about that she said: *“...it is a great honor for me to be selected, and I believe I can grow up a lot with the help of others. I will try my best to make some achievements in these three years.”*

In summary, almost all participants give the positive comments on school-based TPD, and they think approaches of school-based TPD provide the help and support for their teaching, but Tom has different voice *“... too many activities of trainings and competitions became my burden, and these activities interfered with my normal teaching practices...”*

5.4 TPD with ICT integration

In *China's 12th Five-Year Plan (2011-2015)* and *Outline of China's National Plan for Medium and Long-term Education Reform and Development (2010-2020)*, Chinese central government stressed that the government has started the Nationwide Program of Network for Education of Teachers in order to improve the quality of teaching. Its aims are: to modernize teachers' education through educational information, providing support and services for life-long learning through the teachers' education network, TV satellite network, and the Internet; to greatly improve the teaching quality of elementary and high school faculty through large-scale, high-quality and high-efficiency training and continuous education.¹⁷

Under the direction of the background, TPD is added a new element- information technology. The current study emphasizes the application of information technology, and the aim is to investigate what the new content of TPD is and how TPD works with ICT integration. The original purpose of ICT application into TPD is to facilitate TPD as an effective method and tool, but if there are not enough support and related training programs, on the contrary, technology will become the burden and obstacles for successful TPD. The difficulties will be

¹⁷ http://english.gov.cn/2006-02/08/content_182550.htm

caught more attention, but it doesn't mean that we can ignore the current achievement of TPD with ICT integration.

5.4.1 New competence and skills of teachers

The year of 2005 was remembered as a milestone for Shanghai Jiuting middle school. The school moved into a new location and added some new facilities for teaching. Each classroom was installed multi-media equipments, and each teacher had his own desktop computer in his teacher's office. In order to make teachers fully use these new teaching facilities, the school encouraged teachers to have lessons with using multi-media equipment and write lesson plan by using 'office' software. At that time, the trainings for teachers were focusing on some basic computer skills and knowledge, which includes editing documents with the use of common office application programmes; making electronic presentations and multimedia course materials with the use of PowerPoint; making use of internet to browse WebPages and searching information by using some key words; receiving and sending emails. It took 1-2 school years to have the ongoing training.

Most teachers grasped the basic skills and basic knowledge of computers and internet, and they used the multimedia course materials that they made to have lessons in their daily teaching activities. They all handed in electronic lesson plans to teaching supervisor office by email according to the requirement.

Seven years have passed from that time, and computers are popular and widely used nowadays by teachers not only in their teaching but also in their daily life. All of participants have at least one computer and have internet connection at home. Mark said that: *"I bought my own laptop this year in order to avoid having the conflict with my daughter when we used computer."* And Jack also admitted with an exaggerated tone: *"...I cannot live without computer, and I almost have internet surfing more than ten hours every day ..."* Computer and internet plays more and more important role in teacher's life, but when the participants were asked what they did when they have internet surfing, and the following ranks are made according to the frequency: seeing movies; browsing WebPages and reading entertainment news; receiving and sending emails; chatting with friends or colleagues; playing games;

searching teaching materials; reading education information; and the last rank is to take part in online continuing education. (Only Kevin did that)

The different reports from the central government pointed out that the final aim of education informationization in China is to make learner have a lifelong learning ability, so the trainings for teachers' competency and skill were shifted from 'learn to use' into 'use to learn'. Computer and internet as instructive tool and method to develop teachers' teaching concepts, change teacher's role in teaching activities, expand teaching resources, and strengthen the teaching collaboration within colleagues, schools, districts and nations with ICT integration. Some participants are willing to have the challenges for that, and some participants have some worries.

Mary said: *"Last year I participated in 'Inter® future education' which was organized by Songjiang district bureau; I developed my vision of ICT in education, and know how to make use of collaborative teaching and learning with ICT applications from the courses."*

Nancy was worried about the usage of teaching resources: *"...there are too many resources, and it is difficult for me to have a judgment..."*

In short, competency and skills for teachers at present are to make ICT integrate into practical teaching activities. Songjiang district education bureau set up the network (<http://www.sjedu.cn/jyzy/#>) to provide the information technology platform and teaching resources database. Each teacher of Songjiang district has his own username and password to log in. So in present stage, the requirement for teacher's skill and competency is to integrate the use of ICT into existing curricula and make ICT-related changes in curricula. The training for that is still continuing.

5.4.2 Difficulties and obstacles

Information Technology as a supplementary tool and instrument for teachers' professional development and in teaching practices has been applied for seven years in Shanghai Jiuting middle school, but teachers still encountered some difficulties and had some obstacles when they used ICT in their teaching practices and their professional development. According to

participants responses, these difficulties and obstacles can be summarized into the following points.

1.) A lack of some relevant ICT knowledge and suitable application skills

All the participants admitted that their inadequate computer and internet knowledge and skills are main obstacles for them.

David remembered: *“Computer is totally a new machine for me, and I never touched it before. I even don’t know how to switch on and off the computer, but I know that it is the trend for education development.”*

Nancy also recalled: *“...I typed slowly, so it is difficult for me to write a lesson plan with computer and it waste my time a lot...”*

Besides the difficulties with basic computer skills, some teachers also had some difficulties in curriculum design, especially with the use of PPT. Jack is the network administrator and computer science teacher in Shanghai Jiuting middle school, and he pointed out two kinds of problems which existed popularly among teachers. Firstly, the design of the multimedia courseware is too simple, which is only a substitute of the blackboard and it cannot display the advantage of information technology. And on the contrary, some teachers used too many electronic materials such as sounds, pictures and even animation effect. He commented after observing some teachers’ PPT presentation, *“... too many effect sounds and some irrelevant beautiful pictures dispersed the students’ attention and the aim of teaching practices is weakened. I watched it just like seeing a short movie.”*

2.) A lack of related support

There are two information technology teachers in Shanghai Jiuting middle school. Both of them are responsible for teaching students on the subject of computer science and information technology for 25 classes in the school. Jack, one of participants is also a network administrator, who is also responsible for technology support: maintain and administrate the network of campus; provide the train courses for teachers. He said: *“I am called ‘wanjinyou’ (a metaphor refers to the person can be used anywhere) by colleagues, when there is something wrong with their computer, I was called to help them fix it, and even I have to help*

them to fix their computers at their home. The teaching task, technical problems, maintenance of network, updating information in the school website all need time. I am really busy and apologize for those who I cannot provide the help in time... ”

The training courses for teachers' ICT knowledge and skills are provided after the school finished, and the teachers have to take part in 45- 60 minutes' training twice a week during the first years of introducing ICT into the school. Alice said: *“I have a one-year old son, who is waiting for me at home, and after 9 hours of working in the school, I really felt tired to continue learning some computer knowledge...”* The investigation among participants shows that there are no continuous and formal trainings about ICT knowledge for teachers recently in Shanghai Jiuting middle school.

And some participants also mentioned that although they have username and password to access to the education resources database, they still found they cannot open some links or find something in right places. “The available software for teaching is too limited.” Jack said.

3.) A lack of interest and confidence

Five participants teach the subjects which need to have the examination at the end of each semester. Three participants are main and middle administrators in the school, and Ben also teaches Politics and Carl teaches Physics. The others teach calligraphy, computer science, geography and drawing respectively, and Jack (who teaches computer science) is also the network administrator, Mark (who teaches geography) is also leader of comprehensive group.

The main subjects' (Chinese, Maths, English, Physics, Chemistry, and Politics) teachers of participants all show that their teaching tasks are heavy, and the scores of students are important to their teaching evaluation. As a representative among main subjects' teachers, Alice said: *“I don't use ICT in my teaching because improving students' scores are important indicates of evaluation for me. It will take me a lot of time to collect materials and use information technology into my teaching so I would rather give more exercises to my students.”*

Tom is also as another representative to show his less interest to use ICT in his teaching, “... *I teach Chinese calligraphy in the school, and the aim of Chinese calligraphy is to improve students’ Chinese handwriting which is a traditional art to use brushes (maobi) to write Chinese character (hanzi). Students need actual practices to write something on the paper, but if I use ICT in my teaching, I only can give some demonstrations for students. It is meaningless.*”

The investigation among participants also shows that some teachers also feel less confidence to use ICT in the classroom. The two popular issues among participants are focusing on operating the PPT courseware in the classroom and their challenging role. Most participants feel nervous to some extents. David said: “*Each time I use PPT courseware to have lessons and the most worry for me is to lose control of computer...*” Nancy also mentioned, “*With ICT application in my teaching, I feel my role is challenged by students, some students are smarter than me to use computer and internet.*”

5.4.3 Reasons for difficulties

According to the above difficulties and obstacles, the participants also pointed out the different reasons for these difficulties and obstacles from their points of views. Based on their replies, the following reasons with keywords are summarized and illustrated

1.) No enough related course available for teacher training

Almost all the participants (except Kevin) took part in the training course for computer and internet skills in 2005 when information technology was introduced into teachers’ teaching in Shanghai Jiuting middle school. Kevin became a teacher in 2010, so he didn’t present the training courses at that time. The content of the course was mentioned in the previous paragraph in this chapter which mainly focused on editing document with office software, designing and having lessons with PowerPoint.

Eight participants took part in Inter® Future Education course in Songjiang in-service teacher training college, because the credits of the course is one of compulsory parts for teachers who is going to promote their higher profession titles. Some teachers (Nancy, David, Rose) are

exceptions, because when they were transferred from other schools into Shanghai Jiuting School, they had got the senior and intermediate profession titles. And Kevin is a new teacher with primary title, so it is early for him to take part in the course. According to the regulation of promotion professional titles in Songjiang district, teachers have to engage in teaching practices in the school for three years, and then they can begin to join the course.¹⁸ The content of the course covered: 1. Use the designed template to make a PPT course materials 2. Use the information technology platform for TPD 3. Install and use security guard and anti-virus software 4. Set and use Outlook Express 5. Upload and download files from FTP network 6. Register and use Songjiang district education system BBS and personal BLOG¹⁹. These two courses are both short-term training, and there are no others further and continuing training courses provided for teachers by the school and Songjiang district recently.

2.) Inadequate English language competence

Only David and Rose mentioned the potential reason about inadequate English language competence.

When I studied in the university and middle school, my second foreign language is Russian, and I never learned English. When I prepare to install some software in my computer, the instruction of software is English. It is difficult for me to understand and follow the installation steps. (David)

When I searched some information and teaching resources in the internet, some contents are presented in English, but my inadequate English competence narrowed down the range of available resources. (Nancy)

3.) Rapid changes in information technology

Shanghai Jiuting middle school purchased more than 300 computers and at that time the operating system of computer is Windows XP, but nowadays the current operating system is Windows 7 updated from Windows Vista. With the upgrade of the operating system, much

¹⁸ <http://www.jttx.sjedu.cn/xxgl/qtgz/201202/315992.shtml> (in Chinese)

¹⁹ <http://www.jttx.sjedu.cn/jyjs/jsp/201110/43194.shtml> (in Chinese)

software has changed and renewed. After 7 years has passed, the operating system of computer in the school is still Windows XP.

I am just familiar with the function of some software, but after several days, the upgrade of software makes me overwhelm again. It takes me some time to keep up with the all kind of updates. (Jack)

4.) Insufficient staff and technical support

Jack is the only person who is responsible for the maintenance and administration network and technical service of the whole campus.

I also need the help and support, and it is not enough that only I do these things. More staff and technical support must be provided in order to make teachers be skilled with the computer. I hope that we can get some external technical helps from some specialists of Computer Company. (Jack)

5.) Limited access to teaching resources and relevant software

All the participants mentioned that the limited access to teaching resources is also another reason to restrict them to use ICT into their teaching and training.

If I would like to use the teaching resources database, I must register myself first, and it is complicated procedure. After I finished registering it, it reminded me of no right to use. (Carl)

6.) Incomplete information technology resources in education

Songjiang education information network and the information technology forum of Jiuting middle school website are both under construction. The content of some forum on education is empty.

Based on the fifth and sixth reason, the teachers use resources from internet which are really limited.

When I made PPT teaching courses or prepared the teaching lessons plan, I seldom can find useful resources, so the percentage of content from internet is rare. (Mary) The same situation happens among the other participants.

7.) Heavy workload

Each main subject teacher has teaching tasks for at least 90 students, and they spent most of their working time on correcting homework and examinations papers.

David as a representative of main subject teachers said: *“It is convenient for me to use traditional teaching method, and I don’t want to give another burden to myself...”*

8.) Imperfect evaluation of teachers’ achievement

“Teachers’ income in particular, about prize (jiangjin) has great connection with the scores of students. Teachers’ achievements are still evaluated by students’ score. The teachers and students are struggling with a huge number of exercises and examinations.” Seven participants (Ben, Carl, David, Alice, Nancy, Mary and Rose) comment.

9.) Unskilled information technology operations

From most participants (except Jack and Carl) points of views, they are not good at operating some software. When they use PPT course materials to instruct students, some unexpected technical problems happen and make them into embarrassment.

Rose remembered one of her experiences and said: *“I had an open lesson, and I made lots of efforts to make a good PPT courseware, but on that day, I could not open the files. It was awful, and the class stopped for 20 minutes...”* Eight participants had the same experiences.

10.) Difficult adjustment from psychology

When ICT applied to teaching, a significant change for teachers is their challenged role. All of participants agreed that their absolute authorities are challenged now. Adam's replies are very representative and he said: *"My words are like Bible words in the classroom in the past, but nowadays internet spreads information so fast and widely, so I have to face the doubts and questions from the students from time to time in the classroom."* "If the teachers cannot accept their challenged role from their mind, they will feel lost and disturbed." Carl added.

11.) Improper "one fits all" principle

When the administrator of the school learned the theory that boosted the advantage of ICT in education, he promoted all the teachers to use, but some practical situation may not be suitable. Rose's words caught my attention, "The subject of Chemistry has laboratory class, and the students need to do some experiments by themselves. In response to the requirement of ICT application into the lesson, I tried to use the courseware to create a virtual laboratory, but the results are not as good as the students' own experience in the real laboratory."

5.5 Self-development plan for efficient and effective TPD

After learning the participants' experiences on TPD, the interview also investigated to what extent the participants are satisfied with these TPD approaches. The following two tables are formulated based on the responses of participants.

Table 2 Satisfaction with regular TPD

Very Satisfied	Kevin, Alice
Satisfied	Adam, Ben, Carl, Mary, Jack
Ordinary	David, Nancy, Mark, Rose
Dissatisfied	Tom
Very Dissatisfied	None

Table 3 Satisfaction with ICT integration TPD

Very Satisfied	None
Satisfied	Adam, Carl
Ordinary	Ben, Alice, Jack
Dissatisfied	Nancy, Mary, Tom, Mark, Kevin, Rose
Very Dissatisfied	David

In comparison with the two tables, it could be observed from their satisfaction between regular TPD and TPD with ICT integration that teachers' satisfaction with regular TPD is much better than with TPD of ICT integration. The item "ordinary" in these tables has tendency to the item "satisfied" from the participants' responses.

When talking about their own TPD plans in the future, most participants (except Adam) admitted that they are all lack of initiatives and motivations, and their "laziness" is the main obstacles to improve the level of TPD.

Their plans can be summarized into the following points:

- Making good arrangement and harmonious relationship among learning, working and their spare time. (All participants)
- Improving their teaching competency and skills. (Alice and Kevin emphasized)
- Having concrete promotion plan. (Ben, Jack, Alice and Kevin)
- Having enthusiasm to students and teaching. (Except Tom and Rose)
- Strengthen their communication and collaboration with colleagues. (All participants)
- Having initiatives to participate the trainings of TPD. (except David)
- Treating teachers' role as a lifelong career rather than an occupation. (Adam, Ben and Carl stressed)

The findings from the investigation presented in the current chapter, which will be discussed according to the literature reviews and research questions in Chapter Six.

Chapter 6 Discussion

子曰：“三人行，必有我师焉。择其善者而从之，其不善者而改之。”

——孔子《论语·述而》

The Master said, "When I walk along with two others, they may serve me as my teachers. I will select their good qualities and follow them, their bad qualities and avoid them."

Confucian Analects Book VII: Shu R Chapter 21²⁰

6.1 Introduction

The previous several chapters illustrated many aspects of TPD from the theoretical perspective to the practical application perspective. In consistent with the three employed TPD models and interaction paradigm, this chapter will emphasize some key terms according to research questions: professionalism; TPD models; TPD with ICT integration; the efficient and effective TPD.

This chapter will continue discussing the implementation of TPD and some difficulties of TPD with ICT integration based on the collected and analyzed data from the last chapter. The related findings will also be generalized to give a suitable solution to each research question with the help of literature review and the analysis of collected data.

Inadequate and ineffective aspects of TPD with ICT integration from selected research site showed that a successful TPD cannot be put forward without the contribution of external (education reform policy and technical support as environment) and internal factors together. (teachers' motivation and initiatives) The final aim of current study is to find out what aspects of TPD need to be improved, so the existing weakness of TPD will catch more attention to be

²⁰ http://www.cnculture.net/ebook/jing/sishu/lunyu_en/07.html

discussed in this chapter. But it doesn't mean that we ignored the current achievement of TPD. The discussion will follow the sequence of related research questions.

6.2 Related findings to research questions

According to characteristics and contents of TPD, the four research questions are set out for this study. The related findings will answer each research question, which based on the combination of the presented results in Chapter 5 and the reviewed literature and theory in Chapter two and three.

1.) What aspects of professionalism does the current TPD include?

Teacher as an occupation has long history, but with the development of society, it constantly evolved into the way of specialization and professionalism. The professionalism of the current TPD can be shown with two important aspects: teachers' social status and teachers' qualifications. Because Holye(1995) point out clearly that the professional identity of teachers referred to teachers as a specialized occupation with the professional status of the process.

From the literature reviews in Chapter three, and the investigation among participants in Chapter five, teachers' social status and teachers' qualification have their own context.

Teachers' social status is established by legislation and recognition as professionals. "*Teachers Law of the People's Republic of China*" was promulgated in 1993, which provides legislations support for teachers' right, responsibilities and obligations. Teachers Law also gives the definition to a teacher who is sound in moral character and good in professional competence.

Teachers' practical social status is investigated among the participants in the selected research site, which showed that teachers have already been recognized as professionals, but concerning about irreplaceability of teachers, people have vague opinions about that. Moreover, teachers' working conditions, benefits and salaries were also investigated. The results of investigation showed that teachers' working conditions, benefits and salaries have been improved a lot with the government efforts though there are still some problems in them

which include heavy workload and great salary gaps with the other occupations. Improving teachers' social status is still the important task for TPD.

Teachers' qualifications refer to teachers' certificate and teachers' professional titles in the current study. In order to strengthen the professionalism of teachers, teachers have to get the certificate before they become teachers. After teachers engage in teaching, they will get different levels of professional titles by their efforts and their professional development in China. So professionalism is both the important characteristic and the development direction for TPD in China.

2.) To what extent can the employed models give the help to teachers' professional development in practices?

Gaible and Burns (2005) conceptualized three models of TPD: Standardized TPD, Site-based TPD and Self-directed TPD. They all have their strengths and limitation when they are implemented in the process of TPD. Each TPD model also has its own application approach.

Standardized TPD is the most centralized approach which is regarded as top-down and cascade approach. It is good to disseminate knowledge, educational reform policy and instructional methods to teachers throughout a country or region. (Gaible & Burns, 2005) The investigation in chapter five also showed that this model is often employed at national level and its target group mainly consists of school administrator and the representative teacher.

Site-based TPD is the most popular and useful approach because it is closely connected with the needs of teachers, and give the teacher practical instruction in the specific location where they can experience the results of TPD directly by themselves. The main activities of the teacher happen in the classroom, and the main purpose of TPD is to improve the teachers' teaching ability. So the site-based TPD is regarded as the most widely used and effective approach for teachers. Gaible and Burns (2005) showed us a variety of approaches in site-based TPD which consist of observation/assessment; open lessons; lesson study; study group; inquiry/ action research; case studies; mentoring.

These approaches are used in the selected research site as three categories: master and apprentice; teaching competition; teaching researches. Almost all the participants show their satisfaction to this model and think that their TPD can be improved and benefit from it. Based

on the results of investigation, school-based TPD should be given more concerns, so the school-based training management should be strengthened in order to promote the professional development of teachers.

The following findings of school-based TPD on the research site showed some advantages:

I. School-based TPD is close to the real situation of the school, so education theory and teaching practice can be closely integrated.

II. School-based TPD targets to solve the practical problems in teachers' teaching, so it can meet different levels of teachers' learning needs and ease the contradiction of teachers' working and studying.

III. School-based TPD are beneficial to strengthen teachers' collaboration and form a good learning environment for teachers.

IV. School-based TPD also can fully make use of the limited resources of the school to manage, monitor, evaluate and give incentives for teachers' professional development.

So the characteristics of school-based TPD can be generalized as follows: timeliness; targeted; easily operated, harmonious and diversity. Sited-based TPD happens in the school where the teachers are serving, so instruction can be easily operated, and evaluation or feedback can be given in time. Site-based TPD can be specially designed for different teachers, so diversified approaches can be used.

The findings from investigation of participants also suggest that school-based TPD is most effective when delivered in connection with a school development plan, so this model also can help school become a learning organization as Senge (2000) mentioned.

Self-directed TPD refers to that the teacher take full responsibilities for their own TPD. It is self-motivated and innovative approach, but Gaible and Burns (2005) thought it is informal approach which should be conducted based on the previous two models.

Self-directed TPD can make achievement in the context of TPD with ICT integration, because online learning communities can give support for self-directed model and make the model meaningful. The model emphasizes the motivation and innovation of teachers. The finding

from investigation told us that the motivation of teacher is very important factor for TPD, because it can arouse teachers' positive emotion for continuous learning and even lifelong learning. The model is more connected with the next research question, so it will be discussed again in the next research question.

The three employed model can all make contribution to successful TPD, and actually they can interact and be complementary one another.

3.) How can TPD be improved with the use of technology?

Pelgrum and Law (2003) point out information and communication technology have brought some new possibilities to education changes, and these changes also need staff development activities. Teacher is a key role in the education change, so teacher will face a lot of challenge when technology applies to their teaching activities. Teachers' professional development comes into a new paradigm.

When information technology introduced into the classroom at the initial stage, the demands for teachers' skills and competencies are some basic computer and internet knowledge and skills, such as using a series of software of Microsoft Office. The investigation in the research site showed that TDP made some achievement with the efforts of the school and teachers together. The school put an amount of investment on the infrastructure to support ICT into the classroom. And at the same time some training courses are also provided for teacher to grasp these basic skills. This stage is defined as "learn to use". Some teachers found technology can help their teaching on the following aspects: ICT can expand the resources on the lesson designing; PPT courseware increases the interaction between students and teachers. Because China is the country with Confucian Heritage Culture, teacher-led with well-defined content is the main part of teaching activities. (Biggs, 1996) The training mainly emphasized on the production of multimedia course materials.

From the history development point of view, a reform or change always encounter difficulties and obstacles at the initial stage. From the investigation, some difficulties and obstacles are placed in front of participants, which were shown on the following aspects:

- A lack of some relevant ICT knowledge and suitable skills
- A lack of related support

- A lack of interest and confidence

After analysis, some reasons are generalized:

- Not enough related course available for teacher training
- Inadequate English language competence
- Rapid changes in information technology
- Insufficient staff and technical support
- Limited access to teaching resources and relevant software
- Incomplete information technology resources in education
- Heavy workload
- Imperfect evaluation of teachers' achievement
- Unskilled information technology operations
- Difficult adjustment from psychology
- Improper "one fits all principle"

The two categories are formed for these reasons: external support and internal initiatives.

The case study finally found that TPD with the use of ICT in research site meets more challenges than opportunities and more negative effect than positive one. The Chinese central government gives a lot of expectations to educational informationization, especially in teachers' professional development. The policy maker hopes to strengthen teachers' professional development to achieve successes of education reform. From the results of the current study, improving TDP with ICT integration still needs a long process.

On the basis of the literature and employed theory, the current study tries to find some coping strategies to make a few contributions to improve TPD with ICT integration.

Care for old and encourage for new (Plomp, 1996)

Results-driven teaching (Baggage, 2007)

The concept of lifelong learning (UNESCO reports, 2008)

4.) What should teachers do for the efficient and effective TPD?

A successful TPD should be both efficient and effective. The recipient of TPD is the teacher, but the final beneficiary is the student (Hooker, 2008), which showed that a successful TPD should be conducted well based on the student-centered teaching activities. A teacher thinks first of students, second of what students need to learn, and third of the most effective instructional activities that will cause students to learn. (Babbage, 2007) According to the findings of investigation in the selected research site, teachers should make their efforts for efficient and effective TPD from two perspectives: moral and practical teaching practices.

Most participants admitted that they are all lack of initiatives and motivations, and their “laziness” is the main obstacles to improve the level of TPD, so the teachers should keep the concept of lifelong learning in their minds all the time and emphasize the relationship of teaching and learning. Teachers should make use of all available opportunities to enhance learning, and teaching should adhere to linking education theory with practical teaching activities. Teachers’ learning ability should be put into the first place in the teachers’ professional ethics norm.

Teachers improve their practical teaching activities which consist of two parts. Firstly, teachers must improve their teaching skills and competencies by the provided three TPD models. Secondly, it is very important to help teachers have reflective thinking and teaching ability.

Richards (1990) sees reflection as a key component of teacher development, helping to move teachers from being guided largely by “impulse, intuition or routine, to a level where their actions are guided by reflection and critical thinking.” (As cited in Farrell, 1998)

Efficient and effective TPD is not only aim but also a long-term process, and it also needs the external education environment and the internal initiatives of teachers to make their efforts together to achieve.

6.3 Interaction relationship for successful TPD

According to Squires and McDougall’s (2004) interaction theory, and the analysis for a successful TPD among participants in the current study, the finding is shown up that external

educational environment and the intrinsic factors of teachers can work together to affect teachers' professional development in the ways and methods.

First, the external influences refer to the Government authorities and education administration department designed the reform plans and organized training courses, which stemmed from the needs of social progress and educational development in order to improve teachers' roles and behavior, requirements and expectations to strengthen TPD.

Second, the intrinsic factors of the teachers means self-improvement and initiatives of teachers, which is from teachers' self desire, need ,practice and pursuit. To some extent, the influences of teachers' intrinsic factors play a key role for teachers' professional development. The intrinsic factors of the teachers can affect teachers' professional development from two aspects: self-awareness and autonomy professional development. Motivation and initiatives of teachers can accelerate the progress of TPD.

In a word, the efficient and effective TPD needs external educational environment and teachers' intrinsic motivation o have the joint action.

Chapter 7 Conclusion

“学然后知不足，教然后知困。故曰教学相长也”

孔子《礼记·学记》

“The more we study, the more we discover our ignorance, so teaching and learning can promote and benefit each other.”

Confucius “*Liji and Xueji*”

7.1 Introduction

The above sentence reveals the relationship between teaching and learning, and actually it is the right way both for good teaching and learning. The current study also has the same process- the more we study, and the more we found we had so many unclear ideas.

This chapter will conclude the thesis by summarizing the findings and discussing theoretical and practical implications of the findings from the present study

7.2 Summary of findings

The current study is carried on by focusing on some aspects of teachers’ professional development and it conducted by using the case study from qualitative strategy approach. Basis of the collected data, the following findings are stressed.

- 1.) Teachers are recognized as professionals from the occupation. Teachers' certificates and professional titles safeguard the professionalism of the teacher. Teachers are irreplaceable as professionals.
- 2.) The three employed TPD models give the support to improve teachers' professional development in different level, and the school-based TPD model is testified the most practical and useful approach. The efficient and effective TPD should base itself on the place where the teaching activities happen.
- 3.) TPD with ICT integration is in the infancy stage, so there are lots of difficulties and obstacles that exist in the process of the implementation. More staff and technical support are calling.
- 4.) Motivations and initiatives of teachers with suitable educational environment can make contribution to efficient and effective TPD.

7.3 Implication and recommendations

7.3.1 The theoretical implication and recommendations

The following theoretical implication and recommendations can be seen in the current study:

- 1.) Interactions Paradigm can be applied into many fields beyond the two factors of TPD. Squires(1996) also points to the teacher-student perspectives interaction also can effect TPD.
- 2.) TPD is long-term and complicated process and the new content will continue to emerge.
- 3.) The three employed TPD models are only as representatives' forms, and more the other involved factors contribute their efforts to TPD.
- 4.) The generalizability of the findings is limited by the sample size and research site. The findings are only applicable to the real situations of the selected research sites

7.3.2 The practical implication and recommendations

The current study also yields some practical implications and recommendations from the findings, which can be applied to achieve better TPD in the future.

1.) Teachers certificate system should be clearly defined and the teachers' irreplaceable roles should be strengthened.

2.) The teachers' working conditions benefit and salaries should be improved greatly. To improve the teachers' benefits can be looked as an effective way to promote teachers professional development. Because the one hand it will increase the overall enthusiasm of the teachers, and on the other hand it will form a kind of social competitiveness and promote the talents from other occupations to be transferred into the teaching profession. Making teachers are regarded as an attractive occupation.

3.) The another aim of the current study is to arouse the attentions from school administrator or even policy maker in order to make them see the existed difficulties and obstacles in TPD process. Hopefully TPD can get more support from the top.

7.4 Conclusion

In summary, TPD is a long-term and complicated process, so it cannot be isolated from professional guidance, peer collaboration and support, and self-reflection.

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Appendices

Appendix I Cover Letter

03 January, 2012

Dear headmaster and my colleagues,

I write the letter to invite you to participate in my master research study as the interviewees. Now I am studying in the master programme of Comparative and International Education in Oslo University. ICT applying to the education is a popular issue around the world, and I am also interested in improving teachers' professional development with the use of technology, so I decide to choose it as my study's direction.

It was great time when I worked with all of you before. The middle school introduced multi-media equipment into each classroom and connected internet through the campus in 2005, and the website of the school was established at the same time, as well. I remembered it was a totally new thing for us to use the technology to integrate our teaching at that time. The five years passed, and I wonder what the consequences of using technology into teaching and the impact on your individual development are. Therefore, I sincerely invite all of you to accept my interview. The information you provide will be very helpful. Firstly it will help the school to identify and understand the problems you faced when you using the technology into teaching and find out the possible reasons for that. Secondly it will be able to assist the school community to carry out some training to cope with the difficulties you met and adopt some adjustment to improve your individual professional development.

The information you provide will be confidential though the conversation will be recorded during the interview, and I will promise that all the recorded

information will not show in public, and they are only for the present study, and all the interviewees are anonymous. No identifications will be mentioned during and after the interview. Only your answers will be described and analyzed in order to formulate the conclusions about how to improve the teachers' professional development with the use of technology.

The letter will be sent to you together with the interview questions by email. Later I will contact with you by phone or QQ. If you agree to have the interview, the interview will be conducted in Chinese among the 12 persons. It will take you 20-30 minutes to have the interview.

Thanks for your consideration to participate in the interview and I really appreciate for your help and cooperation!

Best regards!

Yours sincerely,

Jie Sun

Appendix II Interview Guide

Demographic background information: Name, Gender, Age, The highest degree obtained now, Teaching subject, The length of teaching (years), The position in the school, Professional titles.

背景资料：姓名，性别，年龄，学历，课任科目，教龄，在学校的职位，职称。

1. **What are your opinions about teachers' status?** Do you agree with the opinion about that someone can be qualified as a teacher as long as he has some relevant knowledge on the subject? Do you think whether a teacher can be regarded as a kind of “professional” occupation?

你对教师的社会地位有什么想法？你是否同意只要掌握某一学科的相关知识就能当老师的说法吗？你认为老师是专业人才吗？

2. **What do you think about teachers' qualification?**

你是怎样看待教师资格的？

3. **What kinds of TPD did you have after you became teachers?** Could you tell me more about that such as content, the range, (in school, in district or in nation) How long did it take? How often did you have that kind of training? And are all the trainings voluntary or obligatory?

你参加过教师专业化培训吗？什么内容？什么范围？什么类型？用了你多长时间？你多久会参加一次这样的培训？这些培训是你自愿参加的还是不得不参加的？

4. **What are your attitudes and opinions to TPD that you participated?**

你对教师专业化培训的态度和观点？

5. **What is the main purpose when you are on line?** Do you have your own PC at home? Do you surf the internet every day? If you did so, how long did you spend on that each week? What do you do when you are surfing in the internet?

你上网的目的是什么？你是否拥有自己的电脑？你每天上网吗？你每天上网多久？上网主要做什么？

- 6. Have you ever participated in the training for ICT application in teaching? What is the content for that?**

你参加过信息科技的培训吗？主要以什么内容为主？

- 7. How do you use the information from the internet for your class teaching?**

在你的课堂上你是怎么运用你从网上获得的信息？

- 8. Did you feel difficult or get some pressure when you used the technology into the teaching? What are they?**

你现在使用信息科技应用到教学中最大的困难和压力是什么？

- 9. Why do you have these difficulties when using technology into your teaching?**

为什么你会有这些困难，简述原因？

- 10. What is your own future plan for successful TPD?**

简述你未来几年教师专业化的计划？